Gestational Diabetes Guidelines for Department of Family Medicine

Subject: Department of Family Medicine

Purpose: 1- To provide common practice guidelines in the department and outlying clinics for family medicine in the care of women with gestational diabetes
2- To optimize and reduce adverse outcomes in this population
3- To educate residents and faculty with review/updates in the management of GODM
4- It is understood that these are recommended and a guideline. While we can recommend these for our patients, each individual patient

Policy: This is a Guideline

Definition: Abnormal glucose tolerance with onset or first recognition during pregnancy that is not clearly overt diabetes or had not previously been diagnosed.

- **Type A1 GODM:** Patients typically have an abnormal glucose tolerance test but are able to keep blood glucose levels in the normal range with dietary changes alone.
- **Type A2 GODM:** Patients typically have an abnormal glucose tolerance test and abnormal glucose levels during fasting and after meals. Type A2 diabetes is usually managed with either oral medications or subcutaneous insulin.

WHY This Matters:

Adverse outcomes associated with overt / GDM:
Women with glucose problems in pregnancy are at risk for fetal anomalies. We now know that it is the level of hyperglycemia that can worsen this outcome.

Maternal
-- Subsequent development of DM II
-- Preeclampsia
-- Gestational HTN
-- Operative delivery
-- Shoulder dystocia and birth trauma

Fetal
-- Macrosomia and large for gestational age infant
-- Subsequent adolescent and childhood obesity and/or metabolic syndrome
-- Birth defects
-- Hydramnios
-- Perinatal mortality
-- Neonatal respiratory problems and metabolic complications (hypoglycemia, hyperbilirubinemia, hypocalcemia)

DFM Practice Guideline

- High risk patients should undergo early antenatal screening (see risk factors at left)
  - use hemoglobin A1C at the first visit to determine risk in singleton pregnancies
  - In multiple gestation, 1 hour GTT at 12-16 weeks, and again at 24- 28 weeks.
- Repeat screening at 24-28 weeks of gestation
- Pregnant women at low risk of GDM should be screen between 24-28 weeks with routine 1 hr GTT

WHO is at risk:

Risk factors for overt DM and GDM / indications for early - 1st antenatal visit screening:
-- GDM in a previous pregnancy
-- Known impaired glucose metabolism (pre-diabetes)
-- BMI >30 kg/m^2 at the 1st antenatal visit
-- Ethnicity: Hispanic, African-American, Native American, South or East Asian, Pacific Islander
-- Diabetes in first degree relatives
-- Macrosomia in previous pregnancy >9 pounds (4.1 kg)
-- Previous unexplained perinatal loss or birth of a malformed infant
-- Glycosuria at the first prenatal visit
-- Personal history of metabolic syndrome, PCOS, current use of glucocorticoids, hypertension

Discussed and reviewed with OB MFM service January, 2016. Revised and approved by OB faculty at OB faculty meeting February, 2016

DFM Practice Guideline

Patients with DM2 prior to pregnancy should have:

1) Prenatal goal HbA1c6 % to reduce the risk of adverse fetal and maternal outcomes
2) Prenatal counseling to advise weight reduction of at least 10 lbs, exercise, and meeting with a dietitian
3) 81 mg aspirin at 12 weeks. Those with DM2 do not need to start aspirin prior to becoming pregnant
4) baseline preeclampsia labs of (CBC, AST, ALT, Creatinine, 24 hour urine protein) at initial OB visit
5) Consult to OB during pregnancy (DFM guideline)

Overt diabetes or pre-existing diabetes mellitus in pregnancy: Patients never diagnosed with diabetes prior to being diagnosed in pregnancy still technically classified as gestational diabetes, even if during the early pregnancy, they have glucose level of the following:
-- HbA1c ≥ 6.5,
-- Fasting glucose ≥ 126 mg/dL,
-- Random plasma glucose ≥200 mg/dL

These levels can possibly indicate that DM2 was present prior to pregnancy, however if not done prior to being pregnant, will still be classified as gestational diabetes.

Pregnant with impaired glucose tolerance – Includes patients with HbA1C - 5.7 - 6.4 known pre-pregnancy or diagnosed at the first prenatal visit.

For those with PCOS on metformin:
- Metformin will increase fertility
- Should continue on metformin during first trimester (till 12 weeks) as decreases miscarriage.
- If not other signs of GDM, should discontinue metformin after first trimester.
- Check 1 hr GTT while off metformin at 24-28 weeks

Screening and diagnostic testing for GDM:
Two step approach:
1) Screening 1-hour (50 gm) nonfasting GTT
-- Abnormal: glucose ≥130 mg/dL or ≥135 mg/dL or ≥140 mg/dL (hospital / practice choice)

2) Diagnostic 3-hour (100-gm) fasting GTT
- Normal fasting glu < 95 mg/dL
- Normal 1-hour glu < 180 mg/dL
- Normal 2-hour glu < 155 mg/dL
- Normal 3-hour glu < 140 mg/dL

Abnormal: TWO or MORE glucose values meet or exceed the thresholds

DFM Practice Guideline

- Use 2 step approach
- Normal is 1 hr GTT of 130 or less

TREATMENT

New data is suggesting targeting treatment based on 3 hour testing *This will not be a DFM Practice Guideline, but can be considered for your patients.*	
Fasting glucose in 3 hour testing	
Less than 95	Start diet control
96-126	Start Glyburide
>126	Start insulin

Lifestyle modifications:
Diet
- Dietitian referral to educate regarding reduced carbohydrate diet

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- Carbohydrates – 33-40% kcal / day, protein – 20% kcal / day, fat – 40% kcal /day
- Exercising for 30 min most days of the week
- Follow up in 1-2 weeks

Glucose monitoring following diagnosis of GDM (4 times daily: morning fasting, and after 3 meals):

- Fasting glucose <= 95 mg/dL
- 1-hour postprandial <= 140 mg/dL
- 2-hour postprandial <= 120 mg/dL

Medication

Oral medications and / or insulin:

- Indicated if glucose levels remain elevated despite lifestyle modifications
- No consensus was found regarding the threshold values to start medications:
  - ≥ 50 % of glucose values are elevated during a 1 week period
  - > 2 glucose values are elevated by > 10 mg/dL at the same meal during a 2 week period
- **Oral medications and insulin are equivalent in efficacy**

<table>
<tr><th>Metformin</th><th>Glyburide</th><th>Insulin</th></tr>
<tr><td colspan="2">Should only use one oral medication. Do not use both together. If not controlled on one, need to initiate insulin.
Not FDA approved for GDM
Pregnancy category B, but are considered first-line treatment for GDM treatment
Cross the placenta
Not associated with birth defects or short-term adverse neonatal outcomes
Long-term metabolic effects on children with in utero exposure are limited</td><td rowspan="2">- Can add to the regimen for pregnant who have uncontrolled GDM despite lifestyle modifications and oral medications OR elect do not use the oral medications
Referral to High risk OB
Does not cross the placenta
Rapid-, intermediate-, long-acting insulin can be used
Total daily dose: 0.7-1.0 units/kg :
½ total daily dose – rapid-acting insulin (Humalog, Novolog) in 3 divided doses at mealtime
Follow up in 1-2 weeks</td></tr>
<tr><td>Initiated at 500 mg daily with food
Follow up in 1-2 weeks
Max dose 2,000 mg daily divided BID</td><td>Lower failure rate comparing to Metformin
Initiated at 2.5 mg daily 1 hour before meal
Follow up in 1-2 weeks
Max dose 15 gm daily divided BID
Should not be used in patients with sulfa allergy</td></tr>
</table>

Fetal surveillance in pregnancies complicated by GDM:

Diet controlled GDM/Class A1:

- Managed as regular pregnancy
- Early induction of labor is not necessary (can deliver at 41 weeks)

GDM on oral medications or/ and insulin:

- No consensus on the optimal approach
- Biweekly NSTs vs weekly biophysical profile beginning at 32 weeks of gestation
- Monthly US to monitor fetal growth starting at 28 weeks. Alternatively, if starting BMI is normal and with normal fetal growth, may consider US ONLY at 38 weeks to assess for macrosomia.
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Timing of delivery of woman with GDM on oral medications or insulin:

- Induction of labor at 39 weeks if glycemic control remains poor despite oral medications / insulin use or if additional another indication for early delivery

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- Induction of labor at 39 weeks decreases the risk of macrosomia, shoulder dystocia and stillbirth

Route of delivery:

- C-section should be offered to pregnant with GDM and EFW ≥ 4.5 kg
- Plan for vaginal birth if EFV < 4.5 kg

Intrapartum management of pregnant with GDM on oral medications or insulin:
Per L&D protocols

Postpartum management of GDM:

- Do not need to continue oral medications or insulin after delivery
- Get fasting glucose prior to discharge
- Overt DM screening at 6-12 weeks postpartum
- Repeat overt DM screening every 3 years

References:

1. American College of Obstetricians and, B.. "Practice bulletin no. 137: gestational diabetes mellitus." Obstetrics and gynecology 122.2 Pt 1 (2013): 406-416.

2. ACOG Committee on Practice Bulletins, B. "ACOG practice bulletin: clinical management guidelines for obstetrician-gynecologists, number 60, March 2005. Pregestational diabetes mellitus." Obstetrics and gynecology 105.3 (2005): 675-685.

3. Panel, N C. "National institutes of health consensus development conference statement: diagnosing gestational diabetes mellitus, march 4-6, 2013." Obstetrics and gynecology 122.2 (2013): 358-369.

4. Final Recommendation Statement: Gestational Diabetes Mellitus, Screening.http://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/gestational-diabetes-mellitus-screening U.S. Preventive Services Task Force. May 2015.

5. American Family Physician : Article http://www.aafp.org/afp/2015/0401/p460.html. Screening, Diagnosis and Management of Gestational Diabetes Mellitus. American Family Physician, Apr 1

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