

Prenatal Care – Gestational Diabetes Mellitus Risk and Management

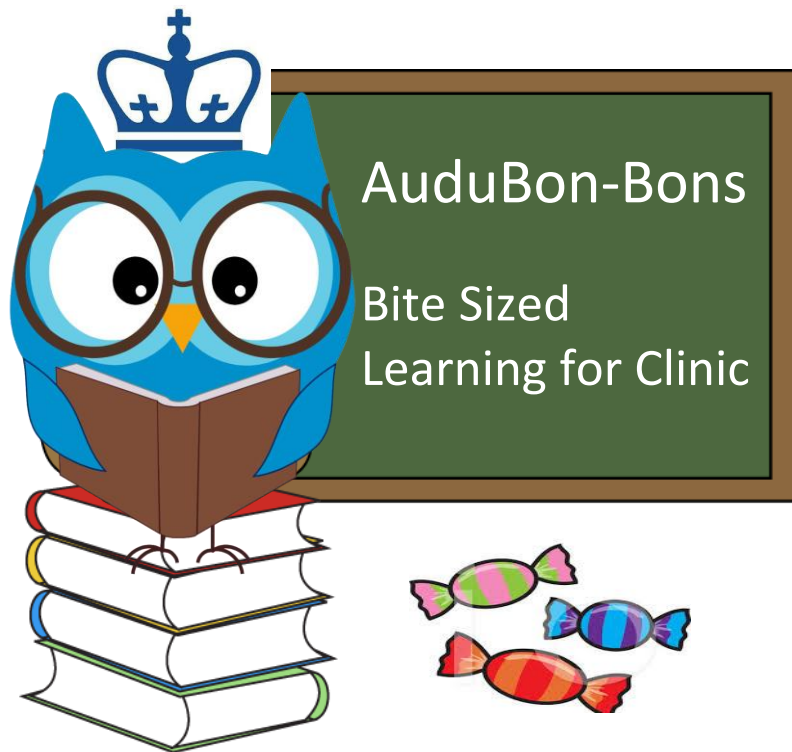
Week 41

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Homework Assignment

Podcast: Dr. Chapa's ObGyn Pearls, *Gestational Diabetes Update*. March 17, 2018

Review ACOG Practice Bulletin # 190, February 2018
Gestational Diabetes Mellitus



LEARNING OBJECTIVES

- To gain an understanding of the impact of GDM on pregnancy
- To be able to identify risk factors for GDM
- To review screening and diagnostic tests for GDM
- To be able to list the different tiers of management
- To be comfortable providing patients counseling on GDM during and after their pregnancies



CASE VIGNETTE

- D.B. is a 28 y.o. G2P0010 at 12 weeks by LMP c/w 10wk u/s presents for new ob visit. She denies pain or bleeding.
- She reports mild nausea which doesn't interfere with her appetite. She and her boyfriend have been planning this pregnancy and are very excited.



FOCUSED HISTORY

What will be pertinent in her history?

- POB: No prior pregnancies
- PGYN: Regular menses; No STI/cysts/fibroids; No abnormal paps
- **PMH:** **Obesity**
- PSH: Laparoscopic cholecystectomy 3 years ago
- Meds: PNV
- All: NKDA
- **Soc:** No toxic habits; **Exercises 2-3x/month**; Lives with her husband; Works as a librarian; Accepts blood products
- **FHx:** **Native American descent**; No hx gyn cancers; **Both parents and sister with DM**



PERTINENT PHYSICAL EXAM FINDINGS

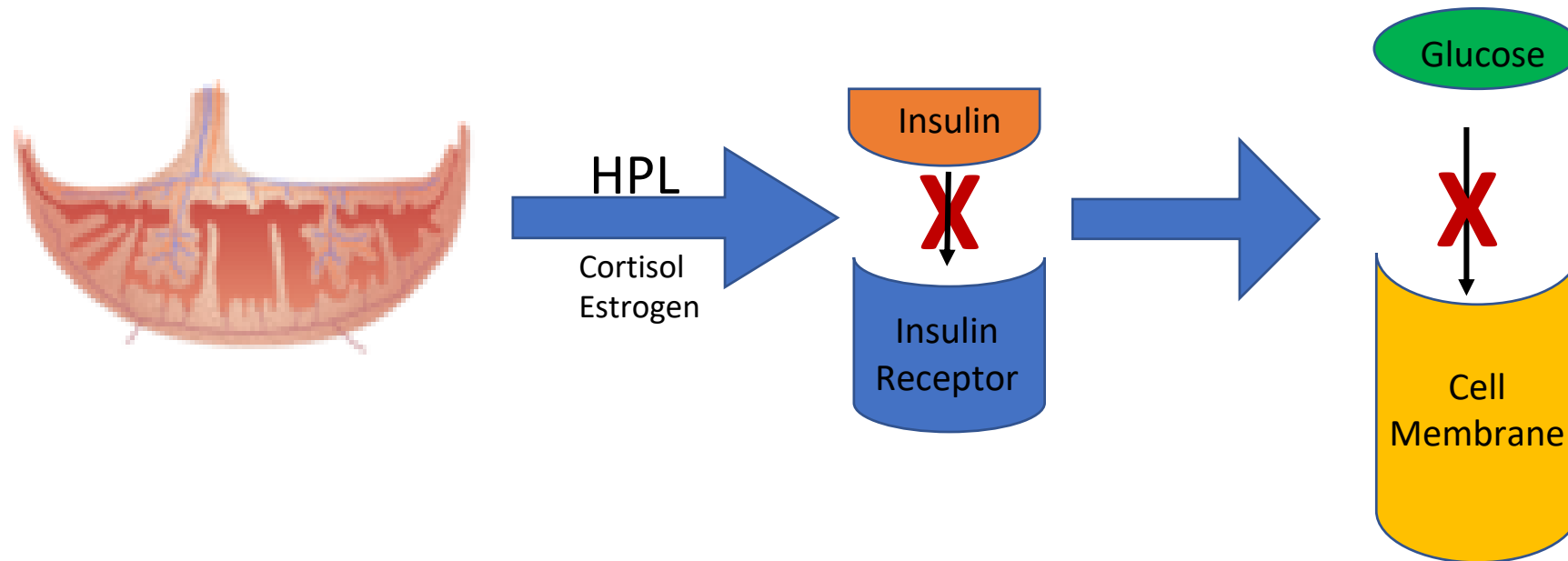
- What will be pertinent in her physical exam?

- **VS:** P 76 BP 117/74 **Wgt: 85kg** **Hgt: 160cm**
- **HEENT:** *Thyroid:* no masses/enlargement
Skin: no acanthosis nigricans
- **Cor:** Regular rhythm, no M
- **Pulm:** CTAB b/l
- **Abd:** Soft, NT/ND, +BS x 4Q
- **Pelvic:** *Vulva:* Normal external female genitalia; No lesions
Vagina: Healthy-appearing mucosa, No discharge
Cervix: Parous os; L/C/P
Uterus: NT, ~8wk size, anteverted
Adnexae: No mass/tenderness b/l
- **Ext:** No calf tenderness b/l; +1 DTR b/l



PATHOPHYSIOLOGY

What is the relationship between pregnancy and blood glucose levels?



ANTENATAL IMPLICATIONS

Your patients asks you what the risks are to her and her baby if she develops GDM. What do you tell her?

Maternal

- Preeclampsia
- Cesarean delivery
- Development of DM

Fetal

- Macrosomia
- Shoulder dystocia
- Hyperbilirubinemia
- Neonatal hypoglycemia
- Stillbirth
- Obesity and diabetes later in life



EVALUATION

What are the standard screening and diagnostic tests employed to diagnose GDM?



Screening: 24-28 weeks gestation

- 50-g oral glucose solution ☐ 1-hr venous glucose determination
- Values \geq screening threshold (130-140 mg/dL, depending on institution)
☐ Diagnostic test

Diagnosis: 100-g 3-hour diagnostic OGTT

- ≥ 2 values meeting or exceeding threshold

Values	Carpenter and Coustan	NDDG
Fasting	95	105
1-hour	180	190
2-hour	155	165
3-hour	140	145

EVALUATION



- Diagnosis: **75-g 2-hour** OGTT
- **≥1** abnormal value meeting or exceeding threshold

Values	IADPSG
Fasting	92
1-hour	180
2-hour	153



- ACOG recommendations
- **A1c** at initial prenatal visit for **every patient**



EARLY SCREENING

What are indications for administering the screening test earlier than 24-28wks EGA?

Overweight/obese AND

- Hx GDM
- Prior infant \geq 4kg
- A1c \geq 5.7%
- HTN
- PCOS
- Physical inactivity
- Impaired glucose tolerance/fasting glucose on prior testing
- Conditions associated with insulin resistance (BMI \geq 40kg/m², Acanthosis nigricans)
- First-degree relative with diabetes
- High-risk race/ethnicity (African American, Latino, Native American, Asian American, Pacific Islander)
- HDL < 35mg/dL, TG > 250mg/dL
- Hx CVD



MONITORING

Your patient asks what the initial steps would be if she is diagnosed with GDM?

- Nutrition counseling
- Blood glucose monitoring 4x/day

Timings	Targets
Fasting	<95 mg/dL
1-hour postprandial	<140 mg/dL
2-hour postprandial	<120 mg/dL



MANAGEMENT

What are the management options for maintenance of optimal blood glucose levels?

- Lifestyle modifications (diet and exercise)
- Pharmacologic therapy



MANAGEMENT – LIFESTYLE MODIFICATIONS

- Demonstrated reduction in LGA, macrosomia, and neonatal fat mass

- Goals:

- Normal blood glucose levels
- Preventing ketosis

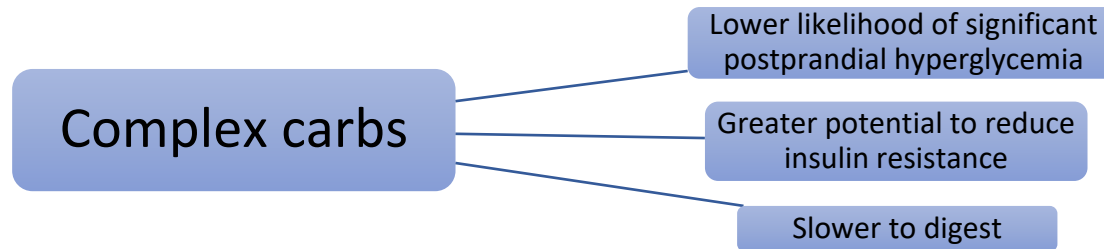


- Adequate weight gain
- Appropriate fetal growth/development

- Three meals and 2-3 snacks daily to **reduce pp glucose fluctuations**

- **Diet composition: Carbohydrates 33-40%, Fat 40%, Protein 20%**

- Carbohydrates: **Complex > Simple**



- **Exercise: Moderate exercise**

- Aim: **30 minutes** of moderate-intensity aerobic exercise **≥5 days/week**



MANAGEMENT – PHARMACOLOGIC THERAPY

- **Injectable**
 - Insulin
 - ACOG: Insulin is considered the preferred treatment when pharmacologic treatment of GDM is indicated
- **Oral** *(NB: NOT approved by the U.S. FDA for treatment of GDM)*
 - Metformin
 - ACOG: Reasonable alternative choice when:
 - Patient declines insulin therapy
 - Provider believes patient will be unable to safely administer insulin
 - Patient cannot afford insulin
- Glyburide
 - ACOG: In most studies, Glyburide does NOT yield equivalent outcomes to insulin or metformin and should NOT be recommended as a first-choice pharmacologic treatment



MANAGEMENT – PHARMACOLOGIC THERAPY

Insulin

- Doesn't cross the placenta
- Starting dosage – 0.7 - 1.0 units/kg daily
- Multiple injections using combination of long/intermediate-acting & short-acting insulin

Metformin

- Crosses placenta and limited long-term data in exposed offspring
- Inhibition of hepatic gluconeogenesis and glucose absorption
- Stimulation of peripheral glucose uptake
- Starting dose: 500mg nightly

Glyburide

- Crosses placenta and higher rates of neonatal hypoglycemia compared to insulin
- Increased insulin secretion and peripheral insulin sensitivity
- Contraindicated in pts with sulfa allergy
- Starting dose: 2.5-5mg daily in divided doses



ANTENATAL SURVEILLANCE

What the recommendations for fetal surveillance in patients with GDM?

- **GDM A2** or **poorly controlled**
 - Initiate at 32w
- **GDM A1**
 - No consensus

NB: No studies demonstrating an increase in stillbirth with well-controlled A1 GDM before 40wks



DELIVERY

What are the recommendations regarding timing of delivery for patients with GDM?

- **A1 GDM**
 - Delivery should NOT be before 39 weeks
 - Expectant management up to 40 6/7 weeks is appropriate
- **A2 GDM, well controlled**
 - Delivery between 39 – 39 6/7 weeks
- **A2 GDM, poorly controlled**
 - Delivery between 37 - 38 6/7 weeks



POSTPARTUM TESTING

How would you manage a patient with GDM after her pregnancy is completed?

- Screening at 4 – 12 weeks postpartum with a 75-g 2-hour OGTT
- Early GCT at subsequent pregnancies



POSTPARTUM COUNSELING

How do you counsel a patient with GDM during her postpartum visit?

- Encourage lifestyle modifications
- Potentially a sevenfold increased risk of T2DM compared with women without a history of GDM
- All patients with GDM – follow up with a PCP and repeat testing every 1 -3 years
- DM or Impaired pp fasting glucose/glucose tolerance ☐ Treatment or preventive therapy referral



CODING AND BILLING

Diagnosis	Code
Gestational diabetes mellitus	O24.4
Gestational diabetes mellitus in pregnancy, diet controlled	O24.410
Gestational diabetes mellitus in pregnancy, insulin controlled	O24.414
Gestational diabetes mellitus in pregnancy, unsp controlled	O24.419



SOCIAL DETERMINANTS OF HEALTH

2017 – Publicly versus privately insured patients with pregestational diabetes

Disparity	Public	Private
Likely to receive a preconception consult	5.7%	31.9%
Rates of HbA1c <6%	37.2%	58.4%
Rates of pregnancy affected by congenital anomalies	10.4%	2.2%

- A preconception consult is an evidence-based intervention known to improve pregnancy outcomes associated with pregestational diabetes, such as HbA1c and risk of congenital anomalies.
 - More education needs to be provided for publicly insured patients during postpartum visits towards improving the rates of preconception counseling visits
 - Providers can take the opportunity to offer preconception counseling during annual gyn visits to ensure that patients are receiving the necessary education and services to improve pregnancy outcomes in patients with pregestational and gestational diabetes.



EVIDENCE

Reference

- Easter, S.R., Rosenthal, E.W., Morton-Eggleston, E., Nour, N., Tuomala, R. and Zera, C.A., 2017. Disparities in care for publicly insured women with pregestational diabetes. *Obstetrics & Gynecology*, 130(5), pp.946-952.



EPIC Phrase

- .BBonGDMPost
- Description: GDM Postpartum Visit Counseling
- The patient was counseled on the increased risk of developing GDM in subsequent pregnancies, as well as an increased of diabetes diagnosis beyond the postpartum period and associated sequelae. We discussed the importance of completing a 2-hour glucose tolerance test 6-12 weeks after delivery, and also the need for follow-up with a PCP to ensure testing for DM every 1-3 years.



EVIDENCE

- Gestational diabetes mellitus. ACOG Practice Bulletin No. 190. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2018;131:e49–64
- Classification and diagnosis of diabetes. American Diabetes Association. [Diabetes Care 2017;40:S11–24](#).
- Moyer, V.A., 2014. Screening for gestational diabetes mellitus: US Preventive Services Task Force recommendation statement. *Annals of internal medicine*, 160(6), pp.414-420.
- Niu, B., Lee, V.R., Cheng, Y.W., Frias, A.E., Nicholson, J.M. and Caughey, A.B., 2014. What is the optimal gestational age for women with gestational diabetes type A1 to deliver?. *American journal of obstetrics and gynecology*, 211(4), pp.418-e1.

