

GESTATIONAL DIABETES: CURRENT MANAGEMENT

What's new and why does it matter?

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DISCLOSURES

- I have no conflicts of interest to report regarding this presentation.

OBJECTIVES

Upon completion of this educational activity, participants will understand...

1. Participants will be able to describe when women should be screened for gestational diabetes mellitus
2. Participants will be able to distinguish different screenings techniques for gestational diabetes
3. Participants will be able to recognize different treatment options for gestational diabetes
4. Participants will be able to identify management plans for women with gestational diabetes mellitus

WHY THIS TOPIC MATTERS?

- High (and increasing) incidence
 - Complicates 6% of all pregnancies
 - Directly proportional to type 2 DM in a given population
 - Incidence of type 2 DM continues to increase
 - GDM is a problem that is **NOT GOING AWAY**

WHY THIS TOPIC MATTERS?

- Maternal Risk:
 - Preeclampsia
 - Cesarean section
- Fetal Risk
 - Macrosomia
 - Shoulder dystocia
 - Birth Trauma
 - Stillbirth
 - Neonatal hypoglycemia
 - Hyperbilirubinemia

DETECTION

WHO SHOULD BE SCREEN?

- Historical screening
 - Family history of diabetes
 - Obstetrical outcome consistent with diabetes (i.e. macrosomia)
- Problem with historical screen – 50% GDM were missed
- Expanded the definition of screening to “High-Risk of DM”
 - This makes up a great majority of ALL pregnant women

WHO SHOULD BE SCREEN?

All pregnant women
>24 weeks

(Generally performed between 24-28 weeks)

WHEN SHOULD WE SCREEN THEM?

Consider testing in all women with a BMI >25 (BMI >23 if Asian) and have at least one of the following risk factors.

- Physical inactivity
- DM in first-degree relative
- High risk race/ethnicity (anyone but caucasian)
- Given birth to child >4000g
- History of GDM
- Chronic hypertension
- HDL <35mg/dL
- History of PCOS
- History of an A1C >5.7%
- History of cardiovascular disease

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DOES EARLY SCREEN WORK?

EGGO STUDY

Outcomes in Early GDM Screening (entire cohort)

	Early Screening (n=454)	Routine Screening (n=458)	Relative Risk (95% CI)
GDM diagnosed	15.2%	12.2%	1.13 (0.95-1.34)
Primary Composite Outcome	59.0%	53.3%	1.13 (0.98-1.29)
Any Diabetic Medication	7.1%	4.6%	1.23 (0.98-1.54)
Insulin	2.6%	0.7%	1.62 (1.25-2.11)

*Composite to include: macrosomia (>4kg), primary cesarean, hypertensive disease of pregnancy, shoulder dystocia, neonatal hyperbilirubinemia or hypoglycemia

EGGO STUDY

Outcomes in those with GDM

	Early Screening (n=69)	Routine Screening (n=56)	P-value
Primary Composite Outcome	73.9%	71.4%	0.76
Any Diabetic Medication	45.0%	33.9%	0.21
Insulin	17.4%	5.4%	0.04
Gestational Age at Delivery	36.7wks	38.1wks	<0.01
*Composite to include: macrosomia (>4kg), primary cesarean, hypertensive disease of pregnancy, shoulder dystocia, neonatal hyperbilirubinemia or hypoglycemia			

SO REALLY WHO & WHEN CAN WE SCREEN?

All pregnant women between 24-28 weeks

“High risk women” can have early screening between 14-20 weeks

SO REALLY WHO & WHEN SHOULD WE SCREEN?

All pregnant women

ONE TIME >24 weeks

(Generally performed between 24-28 weeks)

HOW SHOULD WE SCREEN?

- IADPSG recommends: Universal 75g 2hr OGTT
- NICHD/ACOG recommends: Two step screening process
- Absence of clear evidence that supports one approach over the other
 - RCTs mixed results on outcomes
 - Meta-analysis showed trends, but significant difference between incidence and outcomes
 - Kaiser implementation of one-step screen showed increased incidence with no change in maternal or neonatal outcomes

WHAT THRESHOLDS SHOULD WE USE?

1 hr cutoffs

130

135

140



False positives
3hr GTTs done

- Abnormal screen without GDM at increased risk of worse maternal or neonatal outcomes.

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	Carpenter Coustan	NDDG
Fasting	95	105
One Hour	180	190
Two Hour	155	165
Three Hour	140	145

- Abnormal screen without GDM at increased risk of worse maternal or neonatal outcomes.
- Further research needed on the risk of adverse outcomes for those with 1 abnormal value.

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CONSISTENT CUTOFF IS THE KEY

SO REALLY HOW SHOULD WE SCREEN?

A two step screen with
consistent cutoffs decided by
your groups practice
guidelines.

TREATMENT

WHAT IS FIRST STEP IN TREATMENT?

- Glucose monitoring and lifestyle modifications (diet & exercise)
 - Exact dietary composition and exercise routines are less well studied
- Dietary guidelines: 3 meals with 2-3 snacks a day
 - 30-40% complex carbs
- Exercise guidelines: mirrors recommendations outside of pregnancy
 - 30 minutes, 5 days/week of moderate intensity
 - Simple exercise 15 minutes after most meals, if unwilling to do moderate intensity

WHAT IF NUTRITON AND EXERCISE FAIL?

- No specific threshold value demonstrating nonpharmacological failure
- Insulin is **PREFERRED** treatment for GDM
 - Does not cross the placenta
 - Tight metabolic control
 - Long-term safety
- Many patients (and providers) don't want to use insulin as first line
 - Inconvenient (teaching, uncomfortable)
 - Hypoglycemia risk
 - Expensive

HOW BEST TO GIVE INSULIN?

- Isolated abnormal values at specific times of day
 - Abnormal AM fasting – NPH at night
 - Abnormal fasting all day – Lantus at night
 - Abnormal postprandial– Novolog with meals
- Globally elevated
 - Both a long/intermittent-acting and ultra short-acting insulin
 - Total insulin 0.7-1.0 units/kg daily
 - Consider referral (MFM, endocrine, experienced obstetrician)=

WHAT IF INSULIN ISN'T A GOOD OPTION?

- **FIRST THING: Glyburide should ALMOST NEVER BE USED FIRST LINE FOR ORAL THERAPY**
 - Higher rates of macrosomia and neonatal hypoglycemia
 - Crosses the placenta
 - Lacks long-term safety data
- **Metformin concerns**
 - Not FDA approved for treatment of GDM
 - Long-term neonatal outcomes and metabolic influences unknown
 - Does not produce superior outcomes compared to insulin

SO REALLY WHAT SHOULD I USE?

Per ACOG:

“In women who decline insulin or who the obstetrical care providers believe will be unable to safely administer or cannot afford insulin, metformin (and rarely Glyburide) is a reasonable alternative choice in the context of discussing with the patient the limitations of the safety data and a high rate of treatment failure that requires insulin supplementation.”

SO REALLY WHAT SHOULD I USE?

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“In women who decline insulin or who the obstetrical care providers believe will be unable to safely administer or cannot afford insulin, metformin (and rarely Glyburide) is a reasonable

Insulin is the preferred treatment for diabetes in pregnancy, but not the only suitable one.

MANAGEMENT

ANTENATAL TESTING

- Suboptimal glycemic control is associated with stillbirth
- If treated medically (insulin or oral agents) is a candidate for antenatal testing
- No consensus regarding testing on well-controlled GDM not on medication

DELIVERY TIMING

- Controlled without medication 39w0d to 40w6d
- Controlled with medication 39w0d to 39w6d
 - Poorly controlled individualized

DELIVERY ROUTE

- If EFW>4,500g risk/benefits discussion of scheduled cesarean section
 - Around 588 CD are needed to prevent one permanent brachial plexus palsy
- A single ultrasound for fetal growth after 36 weeks to assess for macrosomia
 - Only 22% of those with LGA on U/S were confirmed LGA at birth

POSTPARTUM

- Perform a 75g, 2hr oral glucose test at 4-12 weeks postpartum
- Impaired values: Fasting ($>100\text{mg/dL}$), 2hr ($>140\text{mg/dL}$)
 - If confirmed impaired
 - refer to primary care physician
 - If normal testing
 - continue physical activity
 - additional glycemc assessment within 1-3 years
- Over 50% of women will maintain glucose intolerance or develop diabetes within 10 years of last pregnancy.

SUMMARY

- Preferred one time screening of all women between 24-28 weeks with a 1 hour 50g glucose load.
 - If is above the predetermined cutoff, a subsequent 3 hour 100g glucose should be performed to confirm diagnosis.
- Diet and exercise are preferred first line treatments.
 - If >50% of blood sugars are outside prespecified range insulin is the preferred treatment for diabetes in pregnancy, but not always the most suitable one.
- Antenatal testing and a fetal growth scan should be performed in the later part of the third trimester for women on medication.
- Delivery should occur at full term (>39wks) unless poorly controlled.
- Postpartum screening with appropriate referral should occur for increased risk of overt diabetes mellitus.

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