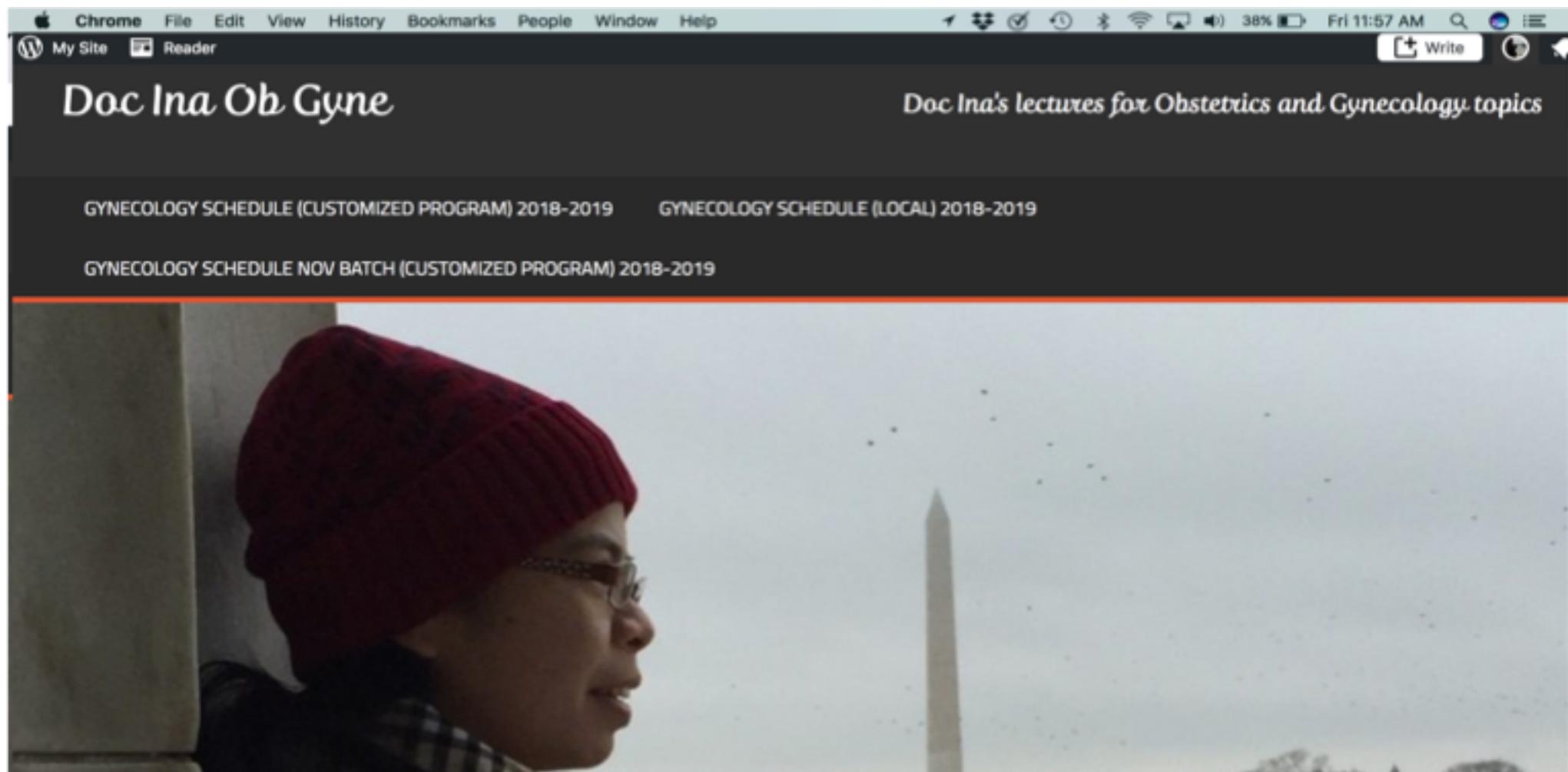


DIABETES MELLITUS IN PREGNANCY

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TO DOWNLOAD MY LECTURE DECK...



REFERENCE

- Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, Casey BM, Sheffield JS (eds). William's Obstetrics 24th edition; 2014; chapter 57 Diabetes Mellitus





Growth hormone

Gestational diabetes mellitus develops during pregnancy in women whose pancreatic function is insufficient to overcome the insulin resistance associated with the pregnant state.



Progesterone

TYPES OF DIABETES MELLITUS

- Diabetes is the most common medical complication of pregnancy.
- **Pregestational/Overt Diabetes** - patients who were known to have diabetes before pregnancy
- **Gestational diabetes** - diagnosed during pregnancy

TABLE 57-3. Proposed Classification System for Diabetes in Pregnancy

Gestational diabetes: diabetes diagnosed during pregnancy that is not clearly overt (type 1 or type 2) diabetes

Type 1 Diabetes:

Diabetes resulting from β -cell destruction, usually leading to absolute insulin deficiency

- a. Without vascular complications
- b. With vascular complications (specify which)

Type 2 Diabetes:

Diabetes from inadequate insulin secretion in the face of increased insulin resistance

- a. Without vascular complications
- b. With vascular complications (specify which)

Other types of diabetes: genetic in origin, associated with pancreatic disease, drug-induced, or chemically induced

Data from American Diabetes Association, 2012.

ADA criteria for the diagnosis of diabetes

1. A1C $\geq 6.5\%$. The test should be performed in a laboratory using a method that is NGSP certified and standardized to the DCCT assay.*

OR

2. FPG ≥ 126 mg/dL (7.0 mmol/L). Fasting is defined as no caloric intake for at least eight hours.*

OR

3. Two-hour plasma glucose ≥ 200 mg/dL (11.1 mmol/L) during an OGTT. The test should be performed as described by the World Health Organization, using a glucose load containing the equivalent of 75-gram anhydrous glucose dissolved in water.*

OR

4. In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose ≥ 200 mg/dL (11.1 mmol/L).

ADA: American Diabetes Association; A1C: glycated hemoglobin; NGSP: National Glycohemoglobin Standardization Program; DCCT: Diabetes Control and Complications Trial; FPG: fasting plasma glucose; OGTT: oral glucose tolerance test.

* In the absence of unequivocal hyperglycemia, criteria 1 to 3 should be confirmed by repeat testing.

American Diabetes Association. Standards of Medical Care in Diabetes 2011. *Diabetes Care* 2011; 34:S11. Copyright © 2011 American Diabetes Association.
Durnwald C. Diabetes Mellitus in Pregnancy: Screening and Diagnosis. Feb 2019.
www.uptodate.com





PREGESTATIONAL/ OVERT DIABETES

PREGESTATIONAL/OVERT DIABETES

- Defined as:
 - random plasma glucose level > 200 mg/dL + classic signs and symptoms such as polydipsia, polyuria, and unexplained weight loss OR
 - fasting glucose level exceeding 125 mg/dL
- For women with only minimal metabolic derangement → the International Association of Diabetes and Pregnancy Study Groups (IADPSG) Consensus Panel (2010) recommends the following threshold values:

TABLE 57-4. Diagnosis of Overt Diabetes in Pregnancy^a

Measure of Glycemia	Threshold
Fasting plasma glucose	At least 7.0 mmol/L (126 mg/dL)
Hemoglobin A _{1c}	At least 6.5%
Random plasma glucose	At least 11.1 mmol/L (200 mg/dL) plus confirmation

PREGESTATIONAL/OVERT DIABETES

- diagnosis of overt diabetes during pregnancy should be confirmed 6 weeks postpartum.
- Risk factors: strong familial history of diabetes, prior delivery of a large newborn, persistent glucosuria, or unexplained fetal losses.

RISK FACTORS FOR
**GESTATIONAL
DIABETES**



THE ADA AND ACOG DEFINE WOMEN AT INCREASED RISK OF OVERT DIABETES BASED ON:

- Body mass index $\geq 25 \text{ kg/m}^2$ ($\geq 23 \text{ kg/m}^2$ in Asian Americans) **plus** one or more of the following
 1. Gestational diabetes mellitus in a previous pregnancy
 2. HbA1C ≥ 5.7 percent (39 mmol/mol), impaired glucose tolerance, or impaired fasting glucose on previous testing
 3. First-degree relative with diabetes
 4. High-risk race/ethnicity (eg, African American, Latino, Native American, Asian American, Pacific Islander)
 5. History of cardiovascular disease
 6. Hypertension or on therapy for hypertension
 7. High-density lipoprotein cholesterol level $<35 \text{ mg/dL}$ (0.90 mmol/L) and/or a triglyceride level $>250 \text{ mg/dL}$ (2.82 mmol/L)
 8. Polycystic ovary syndrome
 9. Physical inactivity
 10. Other clinical condition associated with insulin resistance (eg, severe obesity, acanthosis nigricans)
 11. Previous birth of an infant weighing $\geq 4000 \text{ g}$

PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS



TABLE 57-5. Pregnancy Outcomes of Births in Nova Scotia from 1988 to 2002 in Women with and without Pregestational Diabetes

Factor	Diabetic (n = 516) %	Nondiabetic (n = 150,598) %	P value
Gestational hypertension	28	9	< .001
Preterm birth	28	5	< .001
Macrosomia	45	13	< .001
Fetal-growth restriction	5	10	< .001
Stillbirth	1.0	0.4	.06
Perinatal death	1.7	0.6	.004

Adapted from Yang, 2006.

PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

- 3-fold increase in the spontaneous abortion rate
- Preterm delivery: 5-fold increase risk
- Congenital malformations: 2 fold increase risk
- Altered fetal growth: incidence of macrosomia rises significantly when mean maternal blood glucose concentrations chronically exceed 130 mg/dL
- Unexplained fetal demise: 3-4x higher in DM type I
- Hydramnios: fetal hyperglycemia causes polyuria
- Preterm delivery: Most are due to advanced diabetes with superimposed preeclampsia

PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

- Hypoglycemia (< 45 mg/dL): Newborns experience a rapid drop in plasma glucose concentration after delivery due to hyperplasia of the fetal β -islet cells induced by chronic maternal hyperglycemia.
- Hypocalcemia (total serum calcium concentration < 8 mg/dL): Theories include aberrations in magnesium–calcium economy, asphyxia, and preterm birth.

PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

- Hyperbilirubinemia and Polycythemia: Polycythemia is thought to be a fetal response to relative hypoxia → *polycythemia can lead to hyperbilirubinemia*
 - *sources of this fetal hypoxia are hyperglycemia-mediated increases in maternal affinity for oxygen and fetal oxygen consumption. → hypoxia leads to increased fetal erythropoietin levels and red cell production.*
- Cardiomyopathy: Infants of diabetic pregnancies may have hypertrophic cardiomyopathy that primarily affects the interventricular septum → *this cardiomyopathy may lead to obstructive cardiac failure.*

PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

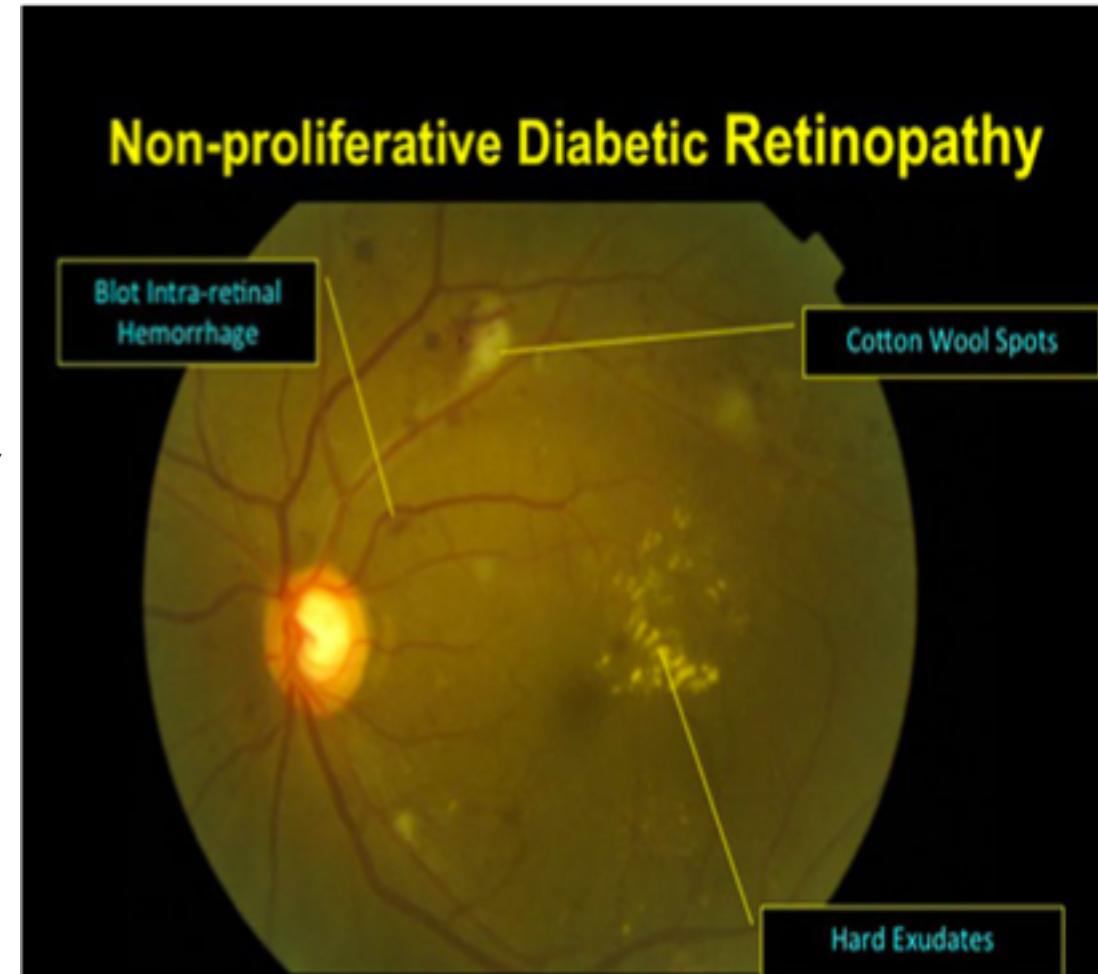
- Long-Term Cognitive development: some studies found an association between maternal DM and decreased IQ and autism/ developmental delay in offspring
- Inheritance of Diabetes: risk of developing type I diabetes if either parent is affected is 3 to 4 percent. Type 2 diabetes has a much stronger genetic component. If both parents have type 2 diabetes, the risk of developing it approaches 40 percent.

PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

- Preeclampsia: develops 3-4x more often among diabetic women: risk factors for preeclampsia include any vascular complication and preexisting proteinuria, with or without chronic hypertension.
- Diabetic Nephropathy: Diabetes is one of the leading causes of end-stage renal disease
 - Clinically detectable nephropathy begins with *microalbuminuria*—30 to 300 mg/24 hours
 - *Macroalbuminuria*—more than 300 mg/24 hours—develops in patients destined to have end-stage renal disease.
 - ***In general, pregnancy does not appear to worsen diabetic nephropathy.***

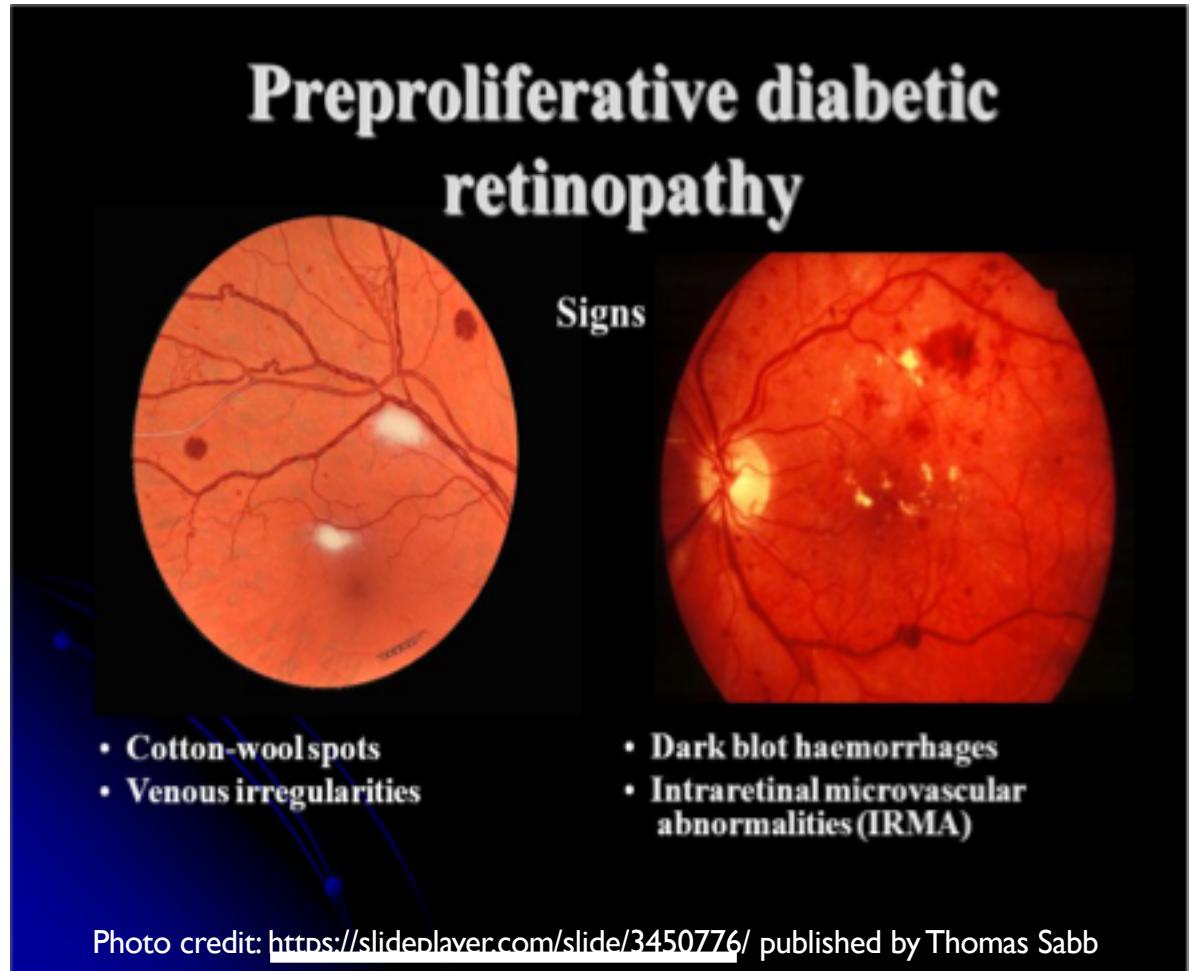
PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

- Diabetic Retinopathy
 - **Benign or background or nonproliferative retinopathy:** the first and most common visible lesions are small microaneurysms followed by blot hemorrhages that form when erythrocytes escape from the aneurysms → leak serous fluid that creates hard exudates



PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

- Diabetic Retinopathy
 - **Preproliferative retinopathy**: abnormal vessels of background eye disease become occluded → retinal ischemia and infarctions (“cotton wool exudates”).
 - Ischemia → neovascularization on the retinal surface and out into the vitreous cavity.
 - *Vision is obscured when there is hemorrhage.*
 - *Laser photocoagulation before hemorrhage reduces the rate of visual loss progression and blindness by half.*



PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

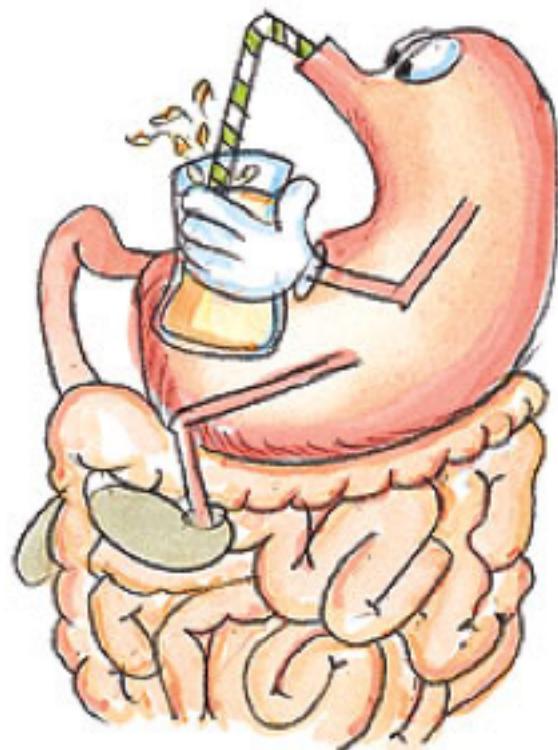
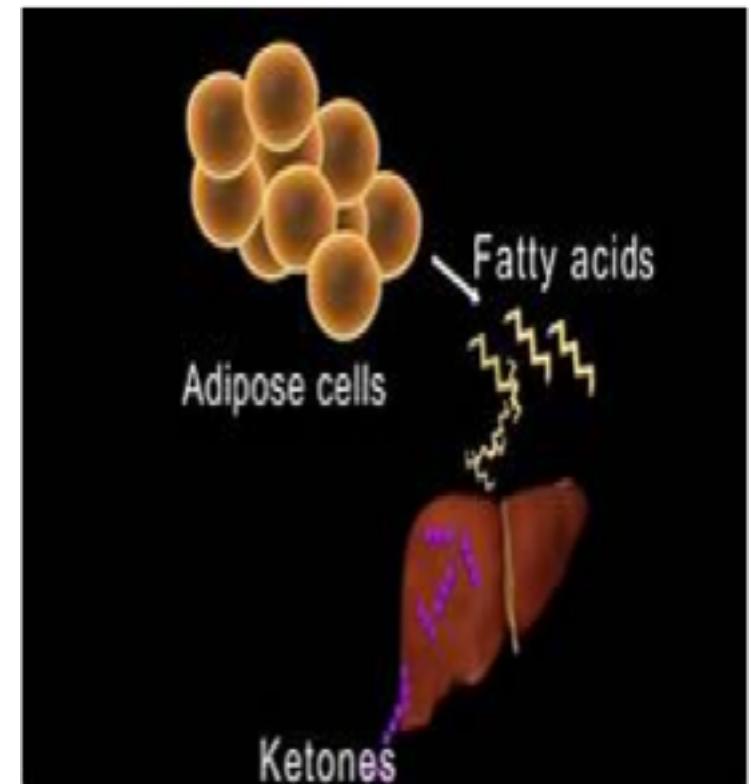


Photo credit: <http://kathleengrieve.blogspot.com/2011/12/diabetic-mondaysfact-28-diabetic.html>

- Diabetic Neuropathy: *diabetic gastropathy* causes nausea and vomiting, nutritional problems, and difficulty with glucose control.
 - Women with gastroparesis should be advised that this complication is associated with a high risk of morbidity and poor perinatal outcome
 - Treatment with metoclopramide and H₂ – receptor antagonist

PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

- Diabetic Ketoacidosis (DKA) may develop with hyperemesis gravidarum, β -mimetic drugs given for tocolysis, infection, and corticosteroids given to induce fetal lung maturation.
- DKA results from an insulin deficiency combined with an excess in counter-regulatory hormones such as glucagon → gluconeogenesis and ketone body formation.
- ketone body **β -hydroxybutyrate** is synthesized at a much greater rate than **acetoacetate**, which is preferentially detected by commonly used ketosis detection methodologies → serum or plasma assays for β -hydroxybutyrate more accurately reflect true ketone body levels.



PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

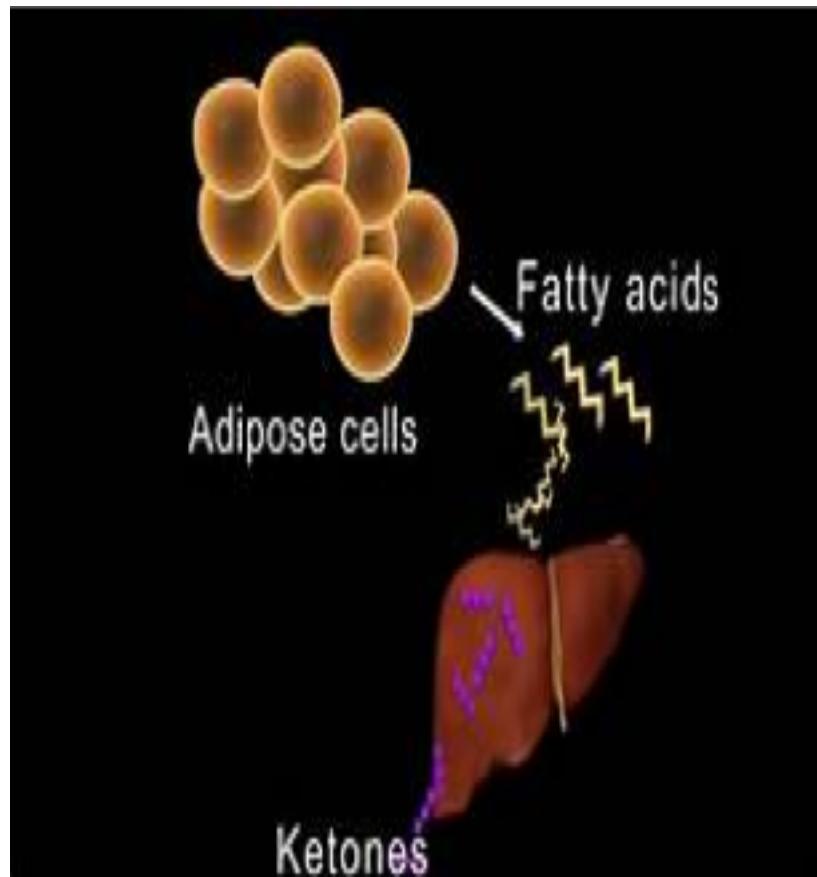


TABLE 57-7. Protocol Recommended by the American College of Obstetricians and Gynecologists (2012) for Management of Diabetic Ketoacidosis During Pregnancy

Laboratory assessment

Obtain arterial blood gases to document degree of acidosis present; measure glucose, ketones, and electrolyte levels at 1- to 2-hour intervals

Insulin

Low-dose, intravenous
Loading dose: 0.2–0.4 U/kg
Maintenance: 2–10 U/hr

Fluids

Isotonic sodium chloride
Total replacement in first 12 hours of 4–6 L
1 L in first hour
500–1000 mL/hr for 2–4 hours
250 mL/hr until 80 percent replaced

Glucose

Begin 5-percent dextrose in normal saline when glucose plasma level reaches 250 mg/dL (14 mmol/L)

Potassium

If initially normal or reduced, an infusion rate up to 15–20 mEq/hr may be required; if elevated, wait until levels decrease into the normal range, then add to intravenous solution in a concentration of 20–30 mEq/L

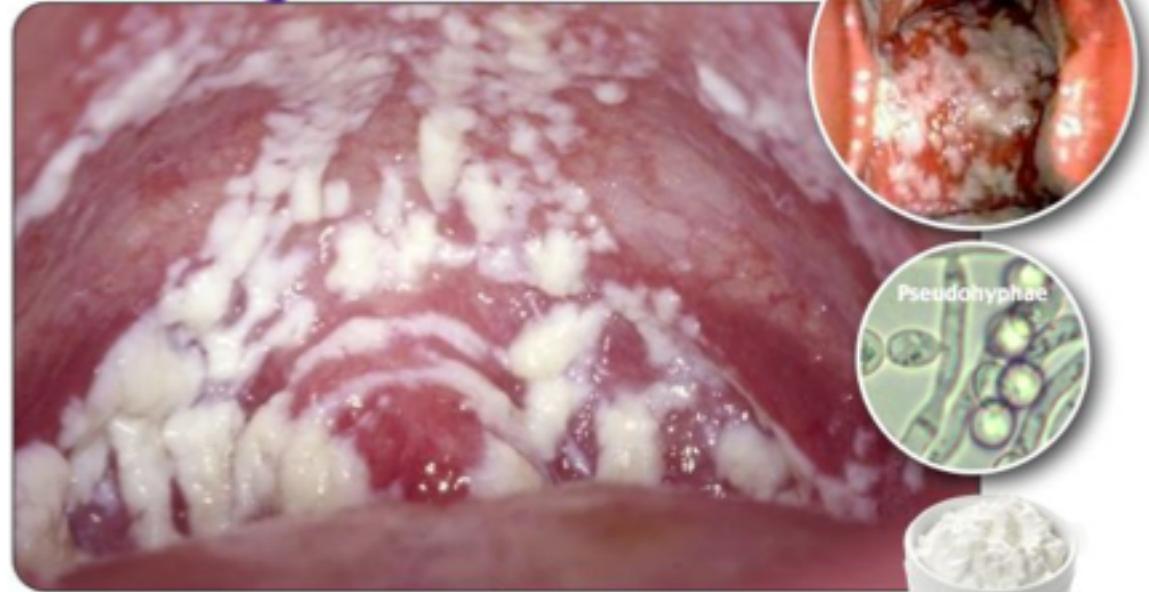
Bicarbonate

Add one ampule (44 mEq) to 1 L of 0.45 normal saline if pH is < 7.1

PREGESTATIONAL/OVERT DIABETES: COMPLICATIONS

- **Infections:** Common infections include *Candida vulvovaginitis*, urinary and respiratory tract infections, and puerperal pelvic sepsis.

Vulvovaginal Candidiasis



Risk factors

- Diabetes
- HIV
- Recent antibiotic use
- Pregnancy

Clinical

- Pruritus
- Dysuria
- Dyspareunia

Discharge

- White, cottage cheese-like
- pH < 4.5
- KOH odor neg
- Pseudohyphae, spores

Photo credit: <https://www.pinterest.ph/pin/562738915925411732/>

MANAGEMENT OF DIABETES IN PREGNANCY: PRECONCEPTIONAL CARE

- Optimal preconceptional glucose control using insulin (ADA):
 - preprandial glucose levels 70 to 100 mg/dL
 - peak postprandial values of 100 to 129 mg/dL
 - daily glucose concentrations < 110 mg/ dL
- Glycosylated hemoglobin (HbA1C) reflects an average of circulating glucose for the past 4 to 8 weeks, is useful to assess early metabolic control → optimal value is < 7 percent (ADA)
 - 4fold increased risk for malformations at levels HbA1C > 10 percent.
- If indicated, evaluation and treatment for diabetic complications such as retinopathy or nephropathy should also be instituted before pregnancy.
- **folate, 400 µg/day orally** is given periconceptionally and during early pregnancy to decrease the risk of neural-tube defects.



MANAGEMENT OF DIABETES IN PREGNANCY: FIRST TRIMESTER

■ Insulin Treatment

- overtly diabetic pregnant woman is best treated with insulin.
- Maternal glycemic control can usually be achieved with multiple daily insulin injections and adjustment of dietary intake.
- Subcutaneous insulin infusion by a calibrated pump may be used during pregnancy. However, women who use an insulin pump must be highly motivated and compliant to minimize the risk of nocturnal hypoglycemia



MANAGEMENT OF DIABETES IN PREGNANCY: FIRST TRIMESTER

- **Monitoring.**
 - Self-monitoring of capillary glucose levels using a glucometer is recommended because this involves the woman in her own care.
 - Glucose goals recommended during pregnancy are shown in the table.

TABLE 57-9. Self-Monitored Capillary Blood Glucose Goals

Specimen	Level (mg/dL)
Fasting	≤ 95
Premeal	≤ 100
1-hr postprandial	≤ 140
2-hr postprandial	≤ 120
0200-0600	≥ 60
Mean (average)	100
Hemoglobin A _{1c}	≤ 6%

MANAGEMENT OF DIABETES IN PREGNANCY: FIRST TRIMESTER

- Diet.
 - Nutritional planning includes appropriate weight gain through carbohydrate and caloric modifications based on height, weight, and degree of glucose intolerance
 - the mix of carbohydrate, protein, and fat is adjusted to meet the metabolic goals and individual patient preferences, but a 175-g minimum of carbohydrate per day should be provided.
 - Carbohydrate should be distributed throughout the day in three small- to moderate-sized meals and two to four snacks.



MANAGEMENT OF DIABETES IN PREGNANCY: FIRST TRIMESTER

- Diet.
 - Weight loss is not recommended, but modest caloric restriction may be appropriate for overweight or obese women.
 - An ideal dietary composition is 55 percent carbohydrate, 20 percent protein, and 25 percent fat, of which < 10 percent is saturated fat.



MANAGEMENT OF DIABETES IN PREGNANCY: 2ND TRIMESTER

- *Maternal serum alpha-fetoprotein determination at 16 to 20 weeks' gestation* is used in association with *targeted sonographic examination at 18 to 20 weeks to detect neural-tube defects and other anomalies*
- Maternal alpha-fetoprotein levels may be lower in diabetic pregnancies, and interpretation is altered accordingly.
- Because the incidence of *congenital cardiac anomalies is 5x greater* in mothers with diabetes, *fetal echocardiography* is an important part of second-trimester sonographic evaluation
- **euglycemia with self-monitoring continues to be the goal in management.**

MANAGEMENT OF DIABETES IN PREGNANCY: 3RD TRIMESTER

- American College of Obstetricians and Gynecologists (2012) suggests initiating *fetal surveillance testing starting at 32 to 34 weeks' gestation*: fetal movement counting, periodic fetal heart rate monitoring, intermittent biophysical profile evaluation, and contraction stress testing.
- patients are routinely instructed to perform fetal kick counts beginning early in the third trimester.
- *At 34 weeks, admission is offered to all insulin-treated women.* While in the hospital, they continue daily fetal movement counts and undergo fetal heart rate monitoring three times a week. *Delivery is planned for 38 weeks.*

MANAGEMENT OF DIABETES IN PREGNANCY: 3RD TRIMESTER

TABLE 57-10. Insulin Management During Labor and Delivery

- Usual dose of intermediate-acting insulin is given at bedtime.
- Morning dose of insulin is withheld.
- Intravenous infusion of normal saline is begun.
- Once active labor begins or glucose levels decrease to < 70 mg/dL, the infusion is changed from saline to 5-percent dextrose and delivered at a rate of 100–150 mL/hr (2.5 mg/kg/min) to achieve a glucose level of approximately 100 mg/dL.
- Glucose levels are checked hourly using a bedside meter allowing for adjustment in the insulin or glucose infusion rate.
- Regular (short-acting) insulin is administered by intravenous infusion at a rate of 1.25 U/hr if glucose levels exceed 100 mg/dL.



GESTATIONAL DIABETES

RISK FACTORS

- Personal history of impaired glucose tolerance, A1C ≥ 5.7 percent, impaired fasting glucose, or gestational diabetes mellitus in a previous pregnancy.
- Member of one of the following ethnic groups, which have a high prevalence of type 2 diabetes: Hispanic American, African American, Native American, South or East Asian, Pacific Islander.
- Family history of diabetes, especially in first-degree relatives
- Prepregnancy weight ≥ 110 percent of ideal body weight or BMI $>30 \text{ kg/m}^2$, significant weight gain in early adulthood and between pregnancies or excessive gestational weight gain during the first 18 to 24 weeks
- Older maternal age (>25 or 30 years of age).



RISK FACTORS

- Previous unexplained perinatal loss or birth of a malformed infant.
- Glycosuria at the first prenatal visit.
- Previous birth of an infant ≥ 4000 or 4500 g (approximately 9 or 10 pounds).
- High density lipoprotein <35 mg/dL (0.90 mmol/L), triglyceride >250 mg/dL (2.82 mmol/L).
- Medical condition/setting associated with development of diabetes, such as metabolic syndrome, polycystic ovary syndrome, current use of glucocorticoids, hypertension or cardiovascular disease, acanthosis nigricans.
- Multiple gestation.



GESTATIONAL DIABETES

- Two-step approach
- One-step approach



GESTATIONAL DIABETES: 2 STEP APPROACH

- Screening should be performed between 24 and 28 weeks AOG in those women not known to have glucose intolerance earlier in pregnancy.
- 50-g screening test (50g OGCT) is followed by a diagnostic 100-g, 3-hour oral glucose tolerance test (100g OGTT) if screening results for 50g OGCT is positive.
- For the 50-g OGCT, the plasma glucose level is measured one hour after a 50-g oral glucose load without regard to the time of day or time of last meal (no fasting required).
- the American College of Obstetricians and Gynecologists (2013) recommends using either **135 or 140 mg/dL** as the 50-g screen threshold.

GESTATIONAL DIABETES

**Screening and Diagnosis:
One step approach using
75g OGTT**

TABLE 57-11. Threshold Values for Diagnosis of Gestational Diabetes

Plasma Glucose	Glucose Concentration Threshold ^a		Above Threshold (%) Cumulative
	mmol/L	mg/dL	
Fasting	5.1	92	8.3
1-hr OGTT	10.0	180	14.0
2-hr OGTT	8.5	153	16.1 ^b

^aOne or more of these values from a 75-g OGTT must be equaled or exceeded for the diagnosis of gestational diabetes.

^bIn addition, 1.7% of participants in the initial cohort were unblinded because of fasting plasma glucose levels > 5.8 mmol/L (105 mg/dL) or 2-hr OGTT values > 11.1 mmol/L (200 mg/dL), bringing the total to 17.8%. OGTT = oral glucose tolerance test.

GESTATIONAL DIABETES

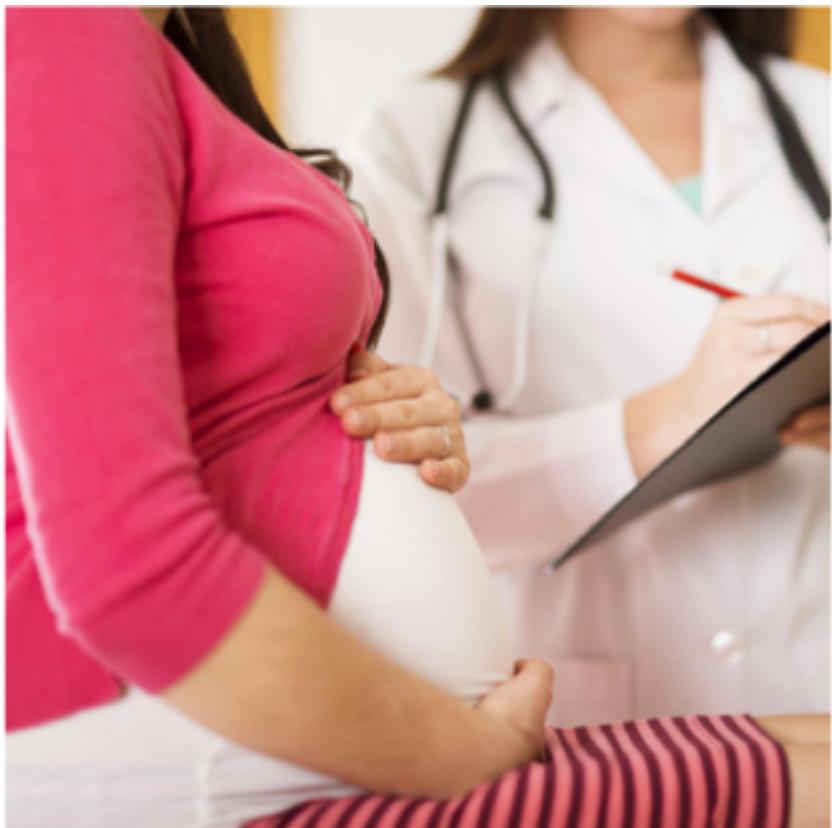


TABLE 57-12. Fifth International Workshop-Conference on Gestational Diabetes: Recommended Screening Strategy Based on Risk Assessment for Detecting Gestational Diabetes (GDM)

GDM risk assessment: should be ascertained at the first prenatal visit

Low Risk: Blood glucose testing not routinely required if all the following are present:

Member of an ethnic group with a low prevalence of GDM

No known diabetes in first-degree relatives

Age < 25 years

Weight normal before pregnancy

Weight normal at birth

No history of abnormal glucose metabolism

No history of poor obstetrical outcome

Average Risk: Perform blood glucose testing at 24 to 28 weeks using either:

Two-step procedure: 50-g oral glucose challenge test (GCT), followed by a diagnostic 100-g OGTT for those meeting the threshold value in the GCT

One-step procedure: diagnostic 100-g OGTT performed on all subjects

High Risk: Perform blood glucose testing as soon as feasible, using the procedures described above, if one or more of these are present:

Severe obesity

Strong family history of type 2 diabetes

Previous history of GDM, impaired glucose metabolism, or glucosuria

If GDM is not diagnosed, blood glucose testing should be repeated at 24 to 28 weeks' gestation or at any time symptoms or signs suggest hyperglycemia

OGTT = oral glucose tolerance test.

Modified from Metzger, 2007.

MATERNAL AND FETAL EFFECTS



- ADA (2003): fasting hyperglycemia > 105 mg/dL may be associated with an increased risk of fetal death during the final 4 to 8 weeks
- Increased frequency of hypertension and cesarean delivery
- Macrosomia
- Neonatal hypoglycemia
- Maternal obesity

MANAGEMENT

- Pharmacological methods are usually recommended if diet modification does not consistently maintain the fasting plasma glucose levels $< 95 \text{ mg/dL}$ or the 2-hour postprandial plasma glucose $< 120 \text{ mg/dL}$
- fasting capillary glucose levels should be kept
 $\leq 95 \text{ mg/dL}$



DIET

- individualized nutritional counseling based on height and weight (carbohydrate- controlled diet sufficient to maintain normoglycemia and avoid ketosis.)
 - daily caloric intake of 30 to 35 kcal/kg.
 - American College of Obstetricians and Gynecologists (2013) suggests: carbohydrate 40 % of total calories, protein 20% and fat 40%
- obese women with a BMI $> 30 \text{ kg/m}^2$: 30% caloric restriction, which approximates 25 kcal/kg/d.



EXERCISE

- American College of Obstetricians and Gynecologists (2013) recommends a moderate exercise program as part of the treatment plan for women with gestational diabetes.



GLUCOSE MONITORING

- the American College of Obstetricians and Gynecologists (2013) recommends **four-times daily glucose monitoring** performed fasting and either 1 or 2 hours after each meal.

Table 1: Target Blood Glucose Values for Pregnant Diabetic Women — Recommendations from ACOG and ADA

ACOG

Fasting glucose	≤ 95 mg/dL
Preprandial glucose	<100 mg/dL
One-hour postprandial glucose	<140 mg/dL
Two-hour postprandial glucose	<120 mg/dL
Glycosylated A1c	$\leq 6\%$

ADA

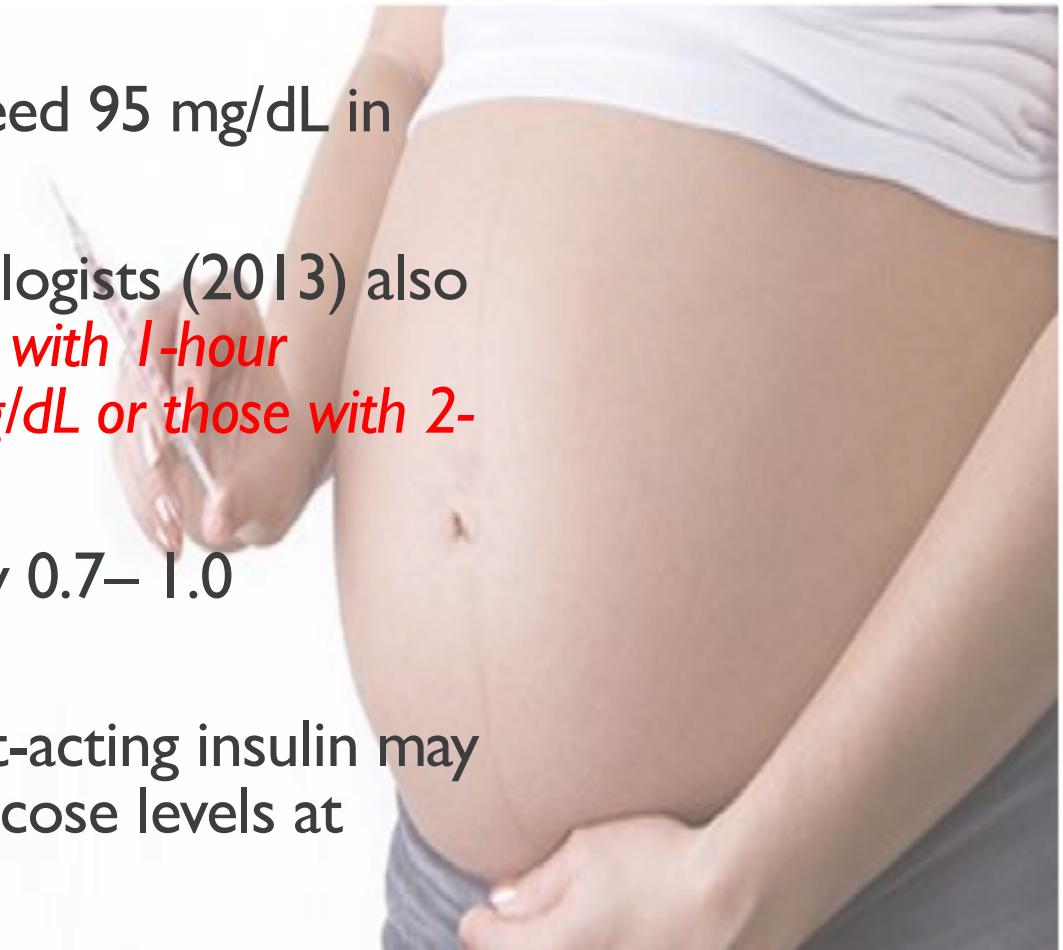
Preprandial glucose	80 to 110 mg/dL
Two-hour postprandial glucose	<155 mg/dL

ACOG: American College of Obstetricians and Gynecologists;
ADA: American Diabetes Association.

Source: References 13, 14.

INSULIN

- Insulin is added if fasting levels persistently exceed 95 mg/dL in women with gestational diabetes.
- American College of Obstetricians and Gynecologists (2013) also recommends that *insulin be considered in women with 1-hour postprandial levels that persistently exceed 140 mg/dL or those with 2-hour levels above 120 mg/dL.*
- If insulin is initiated, the starting dose is typically 0.7– 1.0 units/kg/day given in divided doses
- A combination of intermediate-acting and short-acting insulin may be used, and dose adjustments are based on glucose levels at particular times of the day.



ORAL HYPOGLYCEMIC AGENTS

- Glyburide
- Metformin
- American College of Obstetricians and Gynecologists (2013) acknowledges that both glyburide and metformin are appropriate, for first-line glycemic control in women with gestational diabetes → the committee recommends appropriate counseling when hypoglycemic agents are used.



MODE OF DELIVERY

- American College of Obstetricians and Gynecologists (2013): cesarean delivery should be considered in women with gestational diabetes whose fetuses have a sonographically estimated weight ≥ 4500 g.



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POSTPARTUM EVALUATION

TABLE 57-14. Fifth International Workshop-Conference: Metabolic Assessments Recommended after Pregnancy with Gestational Diabetes

Time	Test	Purpose
Postdelivery (1-3 d)	Fasting or random plasma glucose	Detect persistent, overt diabetes
Early postpartum (6-12 wk)	75-g, 2-hr OGTT	Postpartum classification of glucose metabolism
1-yr postpartum	75-g, 2-hr OGTT	Assess glucose metabolism
Annually	Fasting plasma glucose	Assess glucose metabolism
Triannually	75-g, 2-hr OGTT	Assess glucose metabolism
Prepregnancy	75-g, 2-hr OGTT	Classify glucose metabolism

Classification of the American Diabetes Association (2013)		
Normal Values	Impaired Fasting Glucose or Impaired Glucose Tolerance	Diabetes Mellitus
Fasting < 100 mg/dL	100-125 mg/dL	≥ 126 mg/dL
2 hr < 140 mg/dL	2 hr ≥ 140-199 mg/dL	2 hr ≥ 200 mg/dL
Hemoglobin A _{1c} < 5.7%	5.7-6.4%	≥ 6.5%

OGTT = oral glucose tolerance test.

From American Diabetes Association, 2013; Metzger, 2007.

RX PRESCRIPTION

NAME

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AGE

DATE

Thank you!

youtube channel: Ina Trabon

www.wordpress.com: Doc Ina OB Gyne