DiabetesEd Services | ONLINE UNIVERSITY

Standard 15: Management of Pregnancy in Diabetes 2025

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Land Acknowledgment

- We acknowledge and are mindful that Diabetes Education Services stands on lands that were originally occupied by the first people of this area, the Mechoopda, and we recognize their distinctive spiritual relationship with this land, the flora, the fauna, and the waters that run through this area.

We are Here to Help!

Bryanna Sabourin
Director of Operations

If you have questions, you can chat with us at www.DiabetesEd.net
or call 530 / 893-8635 or email at info@diabetesed.net

Diabetes Education Services Inclusion Statement

Based on the IDEA Initiative inspired by CDR

- Inclusion
- Diversity
- Equity
- Access

- We are committed to promoting diversity and inclusion in our educational offerings.
- We recognize, respect, and include differences in ability, age, culture, ethnicity, gender, gender identity, sexual orientation, size, and socioeconomic characteristics.
- Our goal is to promote equity and access, acknowledging historical and institutional inequities.
- We are committed to practicing cultural humility and cultivating our cultural competence.
- We wish to create a safe space within our community where one's beliefs, experiences, identity, and differences in ability, age, size, socio-cultural/socioeconomic characteristics, and political affiliations are considered and respected.

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- Provides diabetes care to all regardless of insurance
- Provides care to specialized populations especially transplant, pregnancy and other high-risk individuals.
- Usually sees about 10 clients a day

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ADCES Educator of the Year in 2020

Disclosures

- Diana Isaacs, PharmD is a speaker or consultant for the following companies:
  - Dexcom, Abbott, Insulet, Tandem, Novo Nordisk, Lilly, Sanofi, Sequel, Minimed, Cequr, Mannkind

Resources

The ADA Standards of Medical Care is main resource for course content

2. Diagnosis and Classification of Diabetes: Standards of Care in Diabetes—2026 FREE

American Diabetes Association Professional Practice Committee for Diabetes*

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 FREE

American Diabetes Association Professional Practice Committee for Diabetes*

Diabetes & Pregnancy Topics

1. List three issues that affect pregnancy with diabetes.
2. Describe the unique attributes of pre-existing diabetes in pregnancy & gestational diabetes.
3. State the diagnostic criteria & management goals for gestational diabetes.
4. Discuss the potential short-term & long-term complications of fetal exposure to hyperglycemia.
5. Describe prevention measures to ensure safety.

Background

- Prevalence of diabetes in pregnancy is increasing
- Definitions
  - Pre-gestational diabetes: pre-existing type 1 or type 2 diabetes in pregnancy
  - Gestational diabetes: diabetes diagnosed in the 2nd or 3rd trimester of pregnancy

Gestational Diabetes (GDM)

- Detected at 24-28 weeks of pregnancy (most insulin resistant phase)
- GDM prevalence increased by
  - ~10–100% during the past 20 yrs
- Women getting pregnant later
- More obesity

Rates of GDM and Diabetes in Pregnancy increasing

- 1% to 2% have type 1 or type 2 during pregnancy
- From 2000 to 2010
  - GDM rates increased 56%
  - Type 1 or type 2 before pregnancy increased 37%.
- Asian and Hispanic women have higher rates of GDM
- Black and Hispanic women have higher rates of type 1 or type 2 diabetes during pregnancy.

CDC Diabetes During Pregnancy | Maternal Infant Health | CDC

Risks of Diabetes in Pregnancy

- Spontaneous abortion
- Fetal anomalies
- Preeclampsia
- Fetal demise
- Macrosomia
- Neonatal hypoglycemia
- Neonatal hyperbilirubinemia
- Neonatal respiratory distress syndrome

Exposure to hyperglycemia in utero increases risks of obesity, hypertension, and T2D later in life

Perinatal care makes a difference

- Reaching out before pregnancy has the potential for slowing the diabetes epidemic

- Focus:
  - Prenatal,
  - perinatal and
  - postnatal health

Pre-conception: Checking for Diabetes

- In individuals planning pregnancy, screen those with **risk factors** (B)
- Consider testing all individuals of childbearing potential for undiagnosed diabetes (E)

- If BG in normal range, check at 24-28 weeks for Gestational Diabetes using OGTT

2. Diagnosis and Classification of Diabetes: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S27–S49 | https://doi.org/10.2337/dc26-S002

Screening in Early Pregnancy

- Before 15 weeks, screen those with **risk factors** (B)
- Consider screening **everyone** before 15 weeks (E)

- If BG in normal range, recheck at 24-28 weeks for Gestational Diabetes using OGTT

- If fasting BG 110+ or A1C 5.9%+
  - At higher risk of adverse outcomes and more likely to experience GDM and need insulin.

2. Diagnosis and Classification of Diabetes: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S27–S49 | https://doi.org/10.2337/dc26-S002

Risk Factors for Type 2 Diabetes

- Testing should be considered in adults with overweight or obesity (BMI ≥25 kg/m2 or ≥23 kg/m2 in individuals of Asian ancestry) who have >1 risk factor:
  - First-degree relative w/ diabetes
  - Member of a high-risk ethnic population
  - Habitual physical inactivity
  - Pre-diabetes
  - History of heart disease, HTN, or CVD
  - MASLD

2. Diagnosis and Classification of Diabetes: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S27–S49 | https://doi.org/10.2337/dc26-S002

Risk Factors for Type 2 Diabetes (Continued)

Screen using A1C, Fasting Blood Glucose or OGTT.

- HTN - BP > 130/80 mmHg or on therapy
- HDL < 35 or triglycerides > 250
- History of GDM
- Polycystic ovary syndrome (PCOS)
- Other conditions associated w/ insulin resistance:
  - Elevated BMI, acanthosis nigricans, MASLD

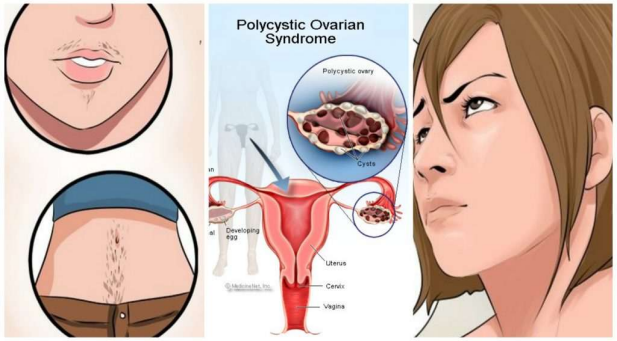
2. Diagnosis and Classification of Diabetes: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S27–S49 | https://doi.org/10.2337/dc26-S002

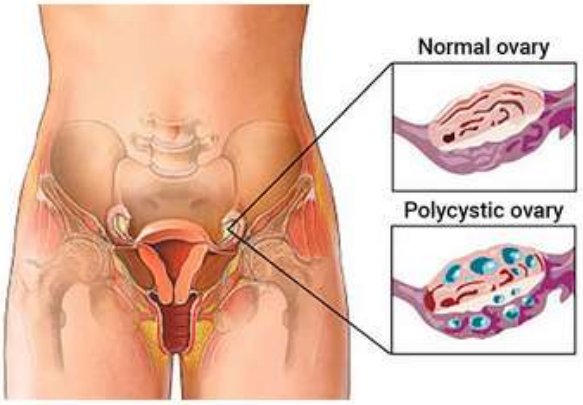
Case Study

- KR has a history of polycystic ovary syndrome (PCOS) treated with metformin 850mg BID.
- Her period is 2 weeks late.
- At provider visit, discovers that she's 4 weeks pregnant
- Fasting glucose is 103 mg/dl
- What is PCOS?

Polycystic Ovarian Syndrome

- Reproductive disorder of hyperandrogenism, ovulatory dysfunction, polycystic ovaries
- About 40% have prediabetes (10% DM)
- Clinical findings
  - Infertility, amenorrhea, irregular menses, hirsutism, acne, obesity, dyslipidemia, acanthosis nigricans.
  - "PCOS is the 5 o'clock shadow of Metabolic Syndrome"
- Treatment
  - Lifestyle changes (lose wt, exercise, healthy eating)
  - Meds (Metformin and others)
  - Monitor BG for prediabetes/ diabetes





Polycystic Ovarian Syndrome and Related Issues

- **Diabetes** 50% with PCOS will have diabetes or pre-diabetes by age 40.
- **High blood pressure** Greater risk of HTN
- **Cholesterol.** Elevated LDL cholesterol and low HDL cholesterol.
- **Sleep apnea.** If BMI 25+, increased sleep apnea risk.
- **Depression and anxiety** more common
- **Endometrial cancer.** PCOS, excess wt, insulin resistance, diabetes, increase risk of developing endometrium cancer

Case Study

- KR has a history of polycystic ovary disease treated with metformin 850mg BID.
- Her period is 2 weeks late.
- At provider visit, discovers 4 weeks pregnant
- Fasting glucose is 103 mg/dl
- What are next actions?

Quick Poll Question 1

- KR is 4 weeks pregnant. Fasting glucose is 103 mg/dl. What best describes KRs current situation?

A. KR has gestational diabetes
B. KR needs a 75 gm OGTT
C. KR has type 2 diabetes
D. KR might have prediabetes

Quick Poll Question 2

- If prediabetes diagnosis is confirmed, what is the next step?

A. Continue metformin through 1st trimester
B. Start basal insulin
C. Add human basal bolus insulin
D. Stop metformin, start sulfonylurea

Metformin for Polycystic Ovary Syndrome

- If metformin used to treat polycystic ovary syndrome and induce ovulation
- Stop at end of first trimester.

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S321–S338 |

How does Pregnancy Affect BG?

BG levels during pregnancy

Pregnancy normally associated with lower fasting glucose and higher post meal glucose

Early pregnancy, more insulin sensitive and insulin needs may drop

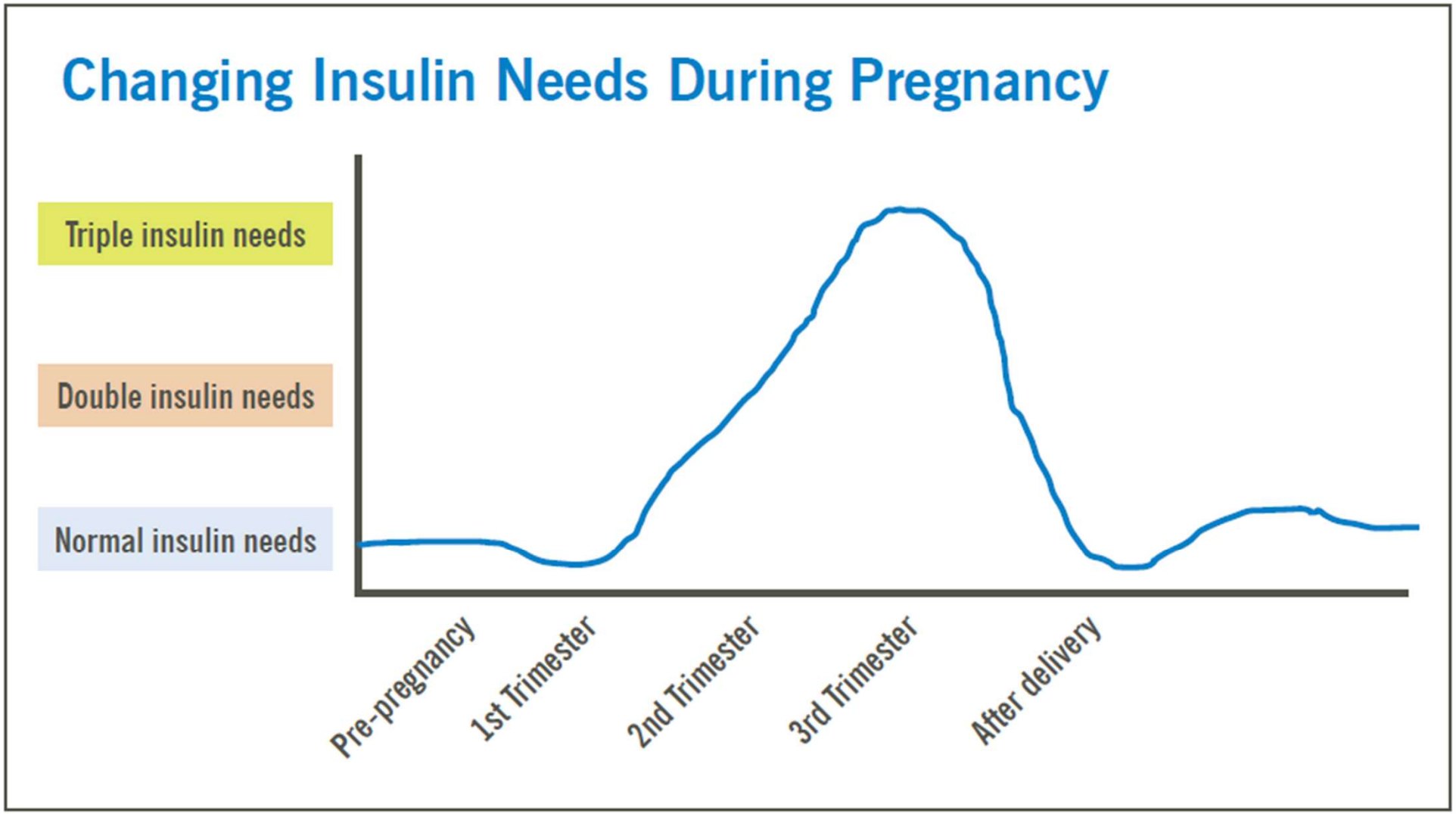
Insulin needs may drop

2nd, 3rd trimester increased insulin resistance

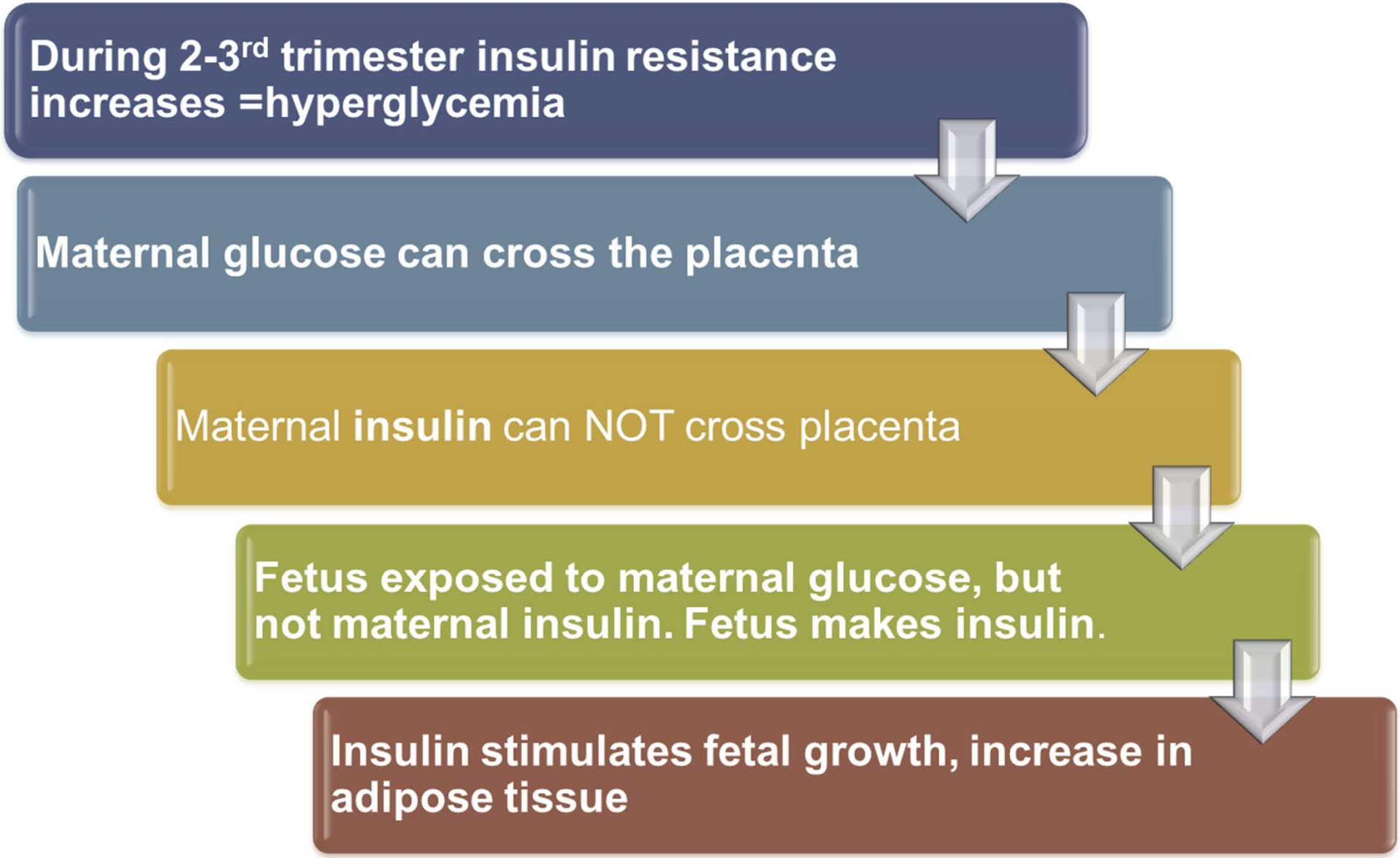
Insulin needs may increase by 2-3x's pre-pregnancy needs

After delivery – insulin needs drop dramatically

Insulin Needs During Pregnancy



Hyperglycemia and Fetal Risk



Poll question 3

- What best describes gestational diabetes?

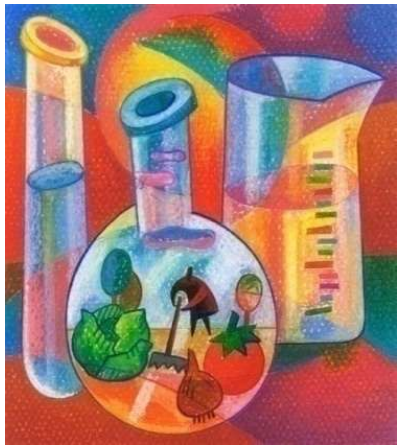
a. Diabetes discovered within the first 12 weeks of pregnancy.
b. Diabetes discovered in the 24-28 week of pregnancy.
c. Risk of getting diabetes before pregnancy.
d. Diabetes discovered at any point during pregnancy.

GDM Criteria - 2 Options
"1 Step" – 75 gm OGTT

- 24-28 weeks
- OGTT in am after overnight fast of 8 + hrs
- **GDM Diagnosis if ANY** of the following values met or exceeded:

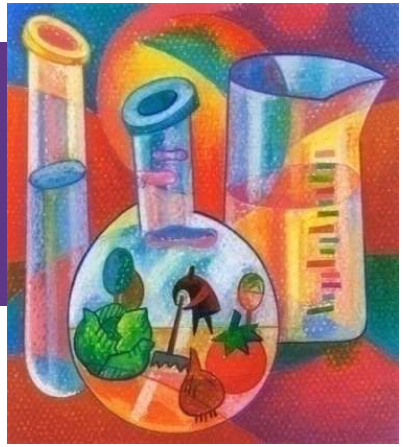
FBG		1 HR		2HR
≥92	or	≥180	or	≥153

Based on Hyperglycemia and Adverse Pregnancy Outcomes Study - IADPSG



2. Diagnosis and Classification of Diabetes: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S27–S49 .

GDM Criteria – Option 2 "NIH 2 step"



- Step 1
  - 50 gm Oral Glucose Tolerance Test (non-fasting)
  - If BG is ≥ 130, 135, or 140 mg/dL after 1 hour, proceed to step 2
- Step 2 – 100 gm Oral Glucose Tolerance (fasting)

GDM - If at least two of the following four plasma glucose levels (measured fasting and at 1, 2, and 3 h during OGTT) are met or exceeded (Carpenter-Coustan criteria)
Fasting: 95 mg/dL (5.3 mmol/L)
1 h: 180 mg/dL (10.0 mmol/L)
2 h: 155 mg/dL (8.6 mmol/L)
3 h: 140 mg/dL (7.8 mmol/L)

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Gestational Diabetes and Pregnancy

Screening and Diagnosis of Diabetes Cheat Sheet

GESTATIONAL DIABETES (GDM)*

PREGNANCY SCREENING	TEST	DIAGNOSTIC CRITERIA
Screen to identify abnormal glucose metabolism before 15 weeks gestation Test those w/ risk factors (table 1) to identify undiagnosed prediabetes or diabetes at first prenatal visit.	Standard Diagnostic Testing and Criteria as listed in Diagnosing Diabetes –Table 2	Standard Diagnostic Testing and Criteria as listed in Diagnosing Diabetes –Table 2 Those with fasting of 110-125 or A1C of 5.9% to 6.4% are at higher risk of adverse outcomes (GDM, need insulin, preeclampisa and other)
Screen for GDM at 24–28 wks gestation for those without known diabetes. Screen those with GDM for diabetes 4 - 12 wks postpartum with 75-g OGTT. Lifelong screening at least every 3 yrs. **Please see reference below for complete guidelines.*	Can use either IADPSG consensus: **"One Step" 75-g OGTT** fasting and at 1 and 2 h (perform after overnight fast of at least 8 h) **"Two step" NIH Consensus – Step 1:** 50gm glucose load (non fasting) w/ plasma BG test at 1 hr. If BG ≥ 130-140*, go to **Step 2 >**	**One Step:** GDM diagnosis when ANY of following BG values are exceeded: • Fasting ≥92 mg/dl, • 1 h ≥180 mg/dl • 2 h ≥153 mg/dl **Two Step -Step 2** - 100g OGTT (fasting) GDM diagnosis if at least 2 of 4 BG measured at fasting, 1h, 2h, 3h after OGTT meet or exceed 95, 180, 155, 140 mg/dL respectively.

2. Diagnosis and Classification of Diabetes: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S27–S49 .

KR Life Study – Poll Question 4

- KR meets with a dietitian and is able to adjust her meal plan and activity and lowers BG to non-diabetes range. At 25 weeks KR goes to the lab for one step 75gm OGTT.
  - Blood glucose results
    - FBG 91
    - 1 hour 183
    - 2 hr 156

- What best describes KRs status?
  A. Normal blood glucose with pregnancy
  B. Pre diabetes associated pregnancy
  C. Gestational diabetes
  D. Diabetes in pregnancy

Risks associated w/ elevated BG -GDM Second and Third Trimester

- Macrosomia: fetal wt > 4000g (~ 9lbs)
  - Birth trauma, shoulder dystocia, clavicular fracture
    - Increased risk of C-section
  - Still birth
  - Polyhydramnios (excess amniotic fluid)
  - Pre-eclampsia: edema, HTN, proteinuria
  - Neonatal hypoglycemia (should be >40)

A1C in Gestational Diabetes

- Due to physiological increases in red blood cell turnover, A1C levels fall during normal pregnancy
- A1C represents an integrated measure of glucose
- May not fully capture postprandial hyperglycemia, which drives macrosomia.
- A1C may be used as a secondary measure of glycemic control in pregnancy, after glucose monitoring.

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S321–S338 |

A1c Target in Pregnancy

- In early gestation, lowest rates of adverse fetal outcomes with A1C <6–6.5%
- In 2-3rd trimester, A1c <6%, has lowest rates of macrosomia, preterm deliver and preeclampsia
- A1c < 6% is optimal during pregnancy, if it can be achieved with out significant hypo.
- Evaluate for and avoid hypoglycemia
  - increases risk of low birth wt
  - May relax A1C<7% if significant hypo

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Glucose Targets in Pregnancy

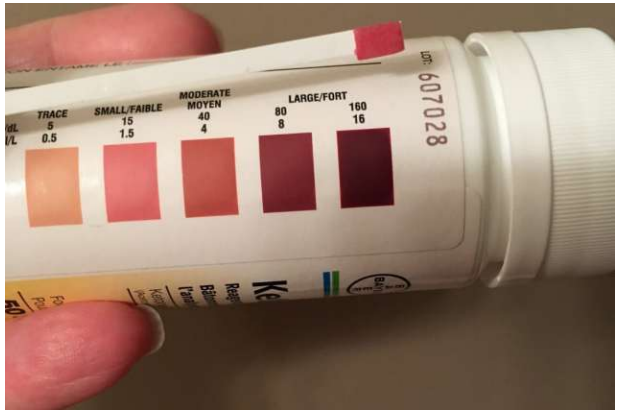
	Blood Glucose Goal		
Glucose measurement	T1D or T2D	GD treated with insulin	GD not treated with insulin
Fasting glucose	70-95 mg/dL	70-95 mg/dL	<95 mg/dL
1 hr post-prandial glucose	110-140 mg/dL	110-140 mg/dL	<140 mg/dL
2 hr post-prandial glucose	100-120 mg/dL	100-120 mg/dL	<120 mg/dL

Monitor 4 times daily (FBG, PPG after each meal) or use CGM)

ADA. Diabetes Care. 2026; 49(Suppl 1): S27-49

Nutrition Intervention: Pregnancy and Diabetes

- Dietitian
  - Referral within 48 hours of diagnosis
  - MNT initiated within 1 week of diagnosis



- Avoid ketonemia from ketoacidosis or starvation ketosis
  - Make sure consuming sufficient carbs
  - Monitor urine ketones
  - DKA associated with risk of stillbirth

Weight Gain in Pregnancy

- Recommended weight gain in singlteton pregnancies

Pre-Pregnancy BMI	Recommended Weight Gain
Normal, BMI<25	25-35lbs
Overweight, BMI=25-29.9	15-25lbs
Obesity, BMI >30	10-20lbs
BMI>35	Not enough data

ADA. Diabetes Care 2026;49(Suppl. 1):S321–S338

70-85% of GDM Manage with Lifestyle

- Food plan based on Dietary Reference Intakes (DRI).
- DRI during pregnancy recommends
  - A minimum of 175 g of carbohydrate (35% of a 2000kcal diet) -indivivdualize
  - a minimum of 71 g of protein
  - and 28 g of fiber.
- Emphasis on monounsaturated and polyunsaturated fats while limiting saturated fats and avoiding *trans* fats.
- Coaching on amount, type of carbohydrate and impact on BG

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S321–S338

Nutrition Notes

- Avoids diets that severely restrict any macronutrient class, specifically,
  - the ketogenic diet that lacks carbohydrates
  - the Paleo diet because of dairy restriction,
  - and any diet characterized by excess saturated fats.
- Limit processed foods, fatty red meat, and sweetened foods and beverages
- Nutrient-dense, whole foods are recommended, including
  - fruits, vegetables, legumes, whole grains
  - healthy fats with n-3 fatty acids that include nuts and seeds and fish, which are less likely to promote excessive weight gain.

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S321–S338

Sample Menu Ideas

1ST TRIMESTER Sample Menu for 2,000 Daily Calories	2ND TRIMESTER Sample Menu for 2,400 Daily Calories	3RD TRIMESTER Sample Menu for 2,600 Daily Calories
Breakfast		
▪ 1 whole wheat tortilla topped with scrambled eggs ▪ 1/3 cup of cooked beans ▪ Salsa and sliced avocado	▪ 1 whole wheat tortilla topped with scrambled eggs, onions, and peppers ▪ 1/3 cup of cooked beans ▪ Salsa and sliced avocado	▪ 2 whole wheat tortilla topped with scrambled eggs, onions, and peppers ▪ 1/3 cup of cooked beans ▪ Salsa and sliced avocado
Lunch		
▪ **Canned protein burger** ▫ Serve on a whole grain tortilla ▪ Sliced tomatoes and cucumbers ▪ 1/3 cup cooked black beans ▪ Apple ▪ 1 cup low-fat milk or high-protein yogurt.	▪ **Canned protein burger** ▫ Topped with slice of part skim milk mozzarella cheese served on a whole grain tortilla ▪ Sliced tomatoes and cucumbers ▪ Nopales ▪ Apple ▪ Four graham cracker halves ▪ 1 cup low-fat milk or high-protein yogurt.	▪ **Canned protein burger** ▫ A slice of low-fat mozzarella ▪ **Simple brown rice with scallions** ▪ 1/3 cup beans + grilled bell peppers ▪ Raw carrots and celery sticks with 1/2 cup of plain Greek yogurt mixed with pico de gallo as dipping sauce ▪ 1/2 cup cut mango served with 1/2 cup of plain Greek yogurt
Dinner		
▪ **Budget-friendly chicken chili** ▪ **Green beans with mushrooms and onions** ▪ Sliced jicama with lime and avocado	▪ **Budget-friendly chicken chili** ▪ **Green beans with mushrooms and onions** ▪ 1 cup of plain yogurt with chopped jicama ▪ Green onion, parsley, dill, and pistachios	▪ **Budget-friendly chicken chili** ▪ **Green beans with mushrooms and onions** ▪ **Grilled chili with lime** ▪ Sliced jicama with lime and avocado
Snacks		
Snack 1: 1 cup of low-fat plain Greek yogurt and 2 sliced guavas **Snack 2:** 1 cup of low-fat milk or plain Greek Yogurt	▪ 1 cup of low-fat plain Greek yogurt and 2 sliced guavas	**Snack 1:** 1 cup of low-fat plain Greek yogurt and 2 sliced guavas **Snack 2:** 1 cup of low-fat milk or plain Greek Yogurt with 2 graham crackers halves **Snack 3:** 3 cups of popcorn with sprinkled Parmesan cheese

https://diabetes.org/sites/default/files/2024-10/Sample-Meal-Plan-for-GDM-FINAL.pdf

Management of Hyperglycemia in Type 2 or GDM

- With type 2 or GDM, oral meds may not be sufficient to get BG to target.
- Glyburide, metformin historically used, but no longer recommended
  - Both cross the placenta to the fetus
- If lifestyle alone doesn't help achieve glucose goals, insulin is preferred.

Insulin vs. Orals in GDM

Oral Glucose-Lowering Agents vs Insulin for Gestational Diabetes
A Randomized Clinical Trial

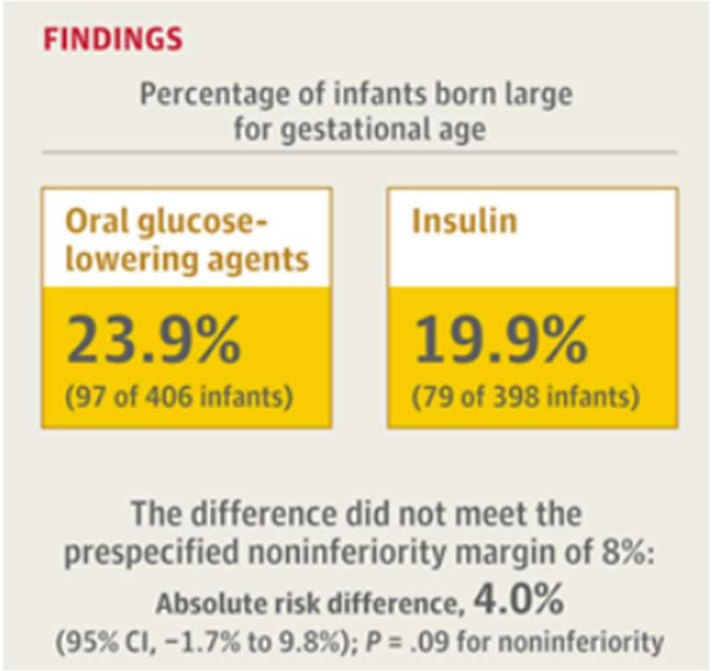
Doortje Rademaker, MD; Leon de Wit, MD, PhD; Ruben G. Duijnhoven, PhD; Daphne N. Voormolen, MD, PhD; Ben Willem Mol, MD, PhD; Arie Franx, MD, PhD; J. Hans DeVries, MD, PhD; Rebecca C. Painter, MD, PhD; Bas B. van Rijn, MD, PhD; and the SUGAR-DIP Study Group

- **Why it matters:**
- It would be nice to use oral agents in pregnancy because:
  - easier to administer
  - less costly
  - better accepted by patients
- **Study Design: Randomized,** open-label noninferiority trial conducted at 25 Dutch centers, participants randomized to orals or insulin
  - Orals included metformin at max tolerated dose + glyburide if additional glucose lowering needed
- **Population**: N = 820 people with GDM and singleton pregnancies
- **Primary endpoint:** % of infants born large for gestational age (birth weight >90%)

Rademaker D, et al. JAMA. 2025 Feb 11;333(6):470-478.

GDM Treatment: Insulin for the Win

- **Outcomes**:
  - Maternal hypoglycemia reported in 20.9% with orals vs. 10.9% insulin (absolute risk difference 10%, 95% CI 2.7 to 21.2%)
  - In exploratory analysis with metformin alone, only 19.7% were LGA
  - Other secondary outcomes did not differ between groups



- **Clinical Takeaways**
  - Metformin + glyburide is **inferior** to insulin for GDM
  - Insulin should remain **1st line** for GDM

Rademaker D, et al. JAMA. 2025 Feb 11;333(6):470-478.

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Management of Pregnancy and Diabetes

- Insulin is preferred for GDM, type 1 and 2
  - Does not cross placenta
  - Can overcome insulin resistance associated w/ T2D
- Either multiple daily injections or insulin pump
- Refer to specialized center
- Get eye exam before pregnancy and every 3 months as recommended
  - Counsel on the risk of development and/or progression of diabetic retinopathy.

Insulin Options in Pregnancy

Name	Type	Dosing Interval
Insulin aspart	Rapid-acting	Up to 15 mins prior to start of each meal
Insulin lispro	Rapid-acting	Up to 15 mins prior to start of each meal
Insulin human regular	Regular	30 minutes prior to meal
Insulin human isophane (NPH)	Intermediate-acting	Every 8-12 hours
Insulin glargine	Long-acting	Every 12-24 hours
Insulin degludec	Long-acting	Every 24 hours

ACOG practice bulletin no. 190. Obstet Gynecol. 2018; 131(2):e49-e64.

Dosing Insulin in Pregnancy

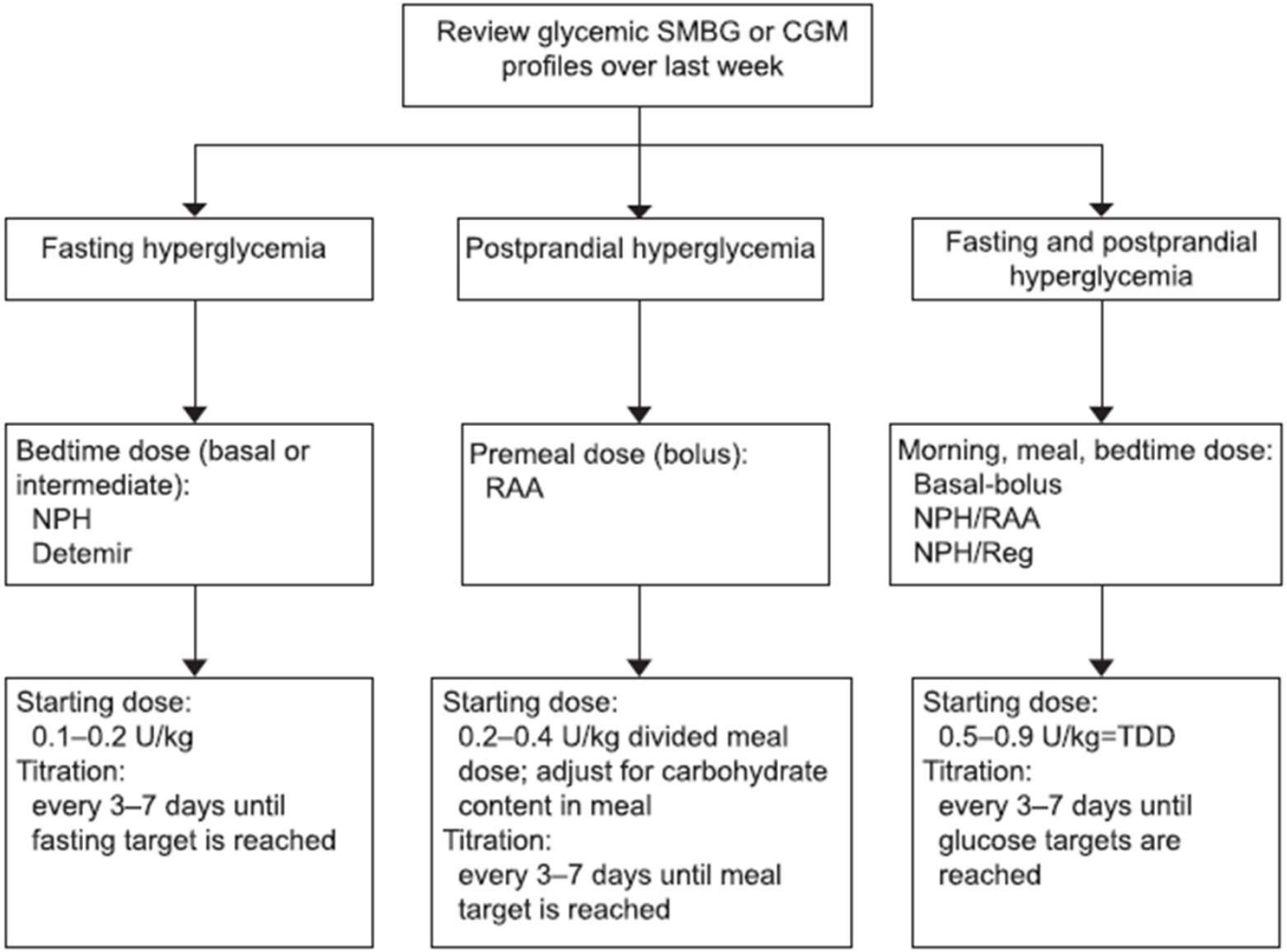

Fig. 2. Insulin initiation and titration strategies. Insulin initiation and titration should be based on glucose profiles determined by self-monitoring blood glucose (SMBG) or continuous glucose monitoring (CGM). NPH, neutral protamine Hagedorn; RAA, rapid-acting insulin analogs; Reg, regular insulin; TDD, total daily dose.

Valent. Insulin Management in Pregnancy. Obstet Gynecol 2024.

Valent AM, Barbour LA. Insulin Management for Gestational and Type 2 Diabetes in Pregnancy. Obstet Gynecol. 2024 Nov 1;144(5):633-647.

Delivering Insulin in Pregnancy

- Human insulin preparations don't cross the placenta
  - Detemir no longer available
  - Long acting: glargine, degludec, or NPH (intermediate acting)
  - Rapid acting preferred over regular insulin (aspart, lispro)
- In GDM, most likely scenario, is insulin can be stopped at delivery

After Delivery - Gestational Diabetes

- Test GDM women for post partum diabetes at 4-12 weeks, using 75 g OGTT (more sensitive vs. A1C)
- OGTT immediately post partum (while still hospitalized) has demonstrated improved engagement but more variability
- Those with GDM need lifelong screening for prediabetes/diabetes at least every 3 yrs using usual criteria
- Those with hx of GDM, found to have prediabetes need intensive lifestyle interventions or metformin to prevent diabetes.

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Postpartum after GDM

- History of GDM equals a 10-fold increased risk of developing type 2 diabetes
- Actions to Prevent include
  - Encourage Breast Feeding (reduces future type 2 risk by 50%)
  - Encourage healthy weight
  - Encourage exercise
  - Make sure connected with health care
  - Lipid profile/ follow BP
  - Preconception counseling

Risk of Future GDM

- Absolute risk of developing T2D after GDM increases linearly through a person's lifetime, being approximately
  - 20% at 10 years,
  - 30% at 20 years,
  - 40% at 30 years,
  - 50% at 40 years, and
  - 60% at 50 years (ADA)

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S321–S338

Improving Health / Preventing GDM

- Connection, healthy environments plus resources critical before pregnancy.
- Consider social determinants of health from youth through adulthood
- Increase access to healthy foods, health care and provide opportunities
- Improve screening and health equity
- Promote prevention of GDM
- Discuss family planning
- Provide individuals and family with ongoing education, screening and resources

Poll Question #5

- ML is 7 weeks pregnant. The midwife checks fasting BG and it is 134. What does ML have?

A. Gestational diabetes

B. Latent Autoimmune Diabetes

C. Pregnancy induced hyperglycemia

D. Pregestational diabetes

Pregestational Diabetes

31 year old with Type 1 Diabetes

- Tells you I am ready to get pregnant.
- Uses an insulin pump and CGM.

Pregestational Diabetes

- Someone with pre-existing type 1 or 2 becomes pregnant
- Elevated BG discovered in first 13 weeks of pregnancy
- Preconception A1c goal < 6.5%.
  - 2/3 of all pregnancies w/ diabetes not planned
- Involve and empower to help prevent complications

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S321–S338

Pregestational Diabetes– Why do glucose levels matter so much?

- Risk of malformation associated w/ degree of hyperglycemia during first trimester
  - 1st Trimester potential complications directly proportional to A1c levels
  - 5-8 weeks is organogenesis.
- Diabetes in pregnancy may increase risk of obesity, hypertension, and type 2 diabetes in offspring later in life

First 10 Weeks of Pregnancy Risks

Complications directly proportional to A1C elevations during the first 10 weeks of pregnancy.

- Diabetic embryopathy, especially anencephaly, microcephaly
- Congenital heart disease
- Renal anomalies
- Caudal regression

Pregnancy, Youth and Diabetes

- The TODAY study documented that despite disease- and age-specific counseling
  - 10.2% of the females in the cohort became pregnant over an average of 3.8 years of study participation.
  - 26.4% of pregnancies ended in a miscarriage, stillbirth, or intrauterine death
  - 20.5% of the liveborn infants had a major congenital anomaly.

TODAY Study Group. Pregnancy Outcomes in Young Women With Youth-Onset Type 2 Diabetes Followed in the TODAY Study. Diabetes Care. 2021 Dec 8;45(5):1038–45.

Preconception Counseling

- Start at puberty and continue for anyone with diabetes and reproductive potential
- Incorporate preconception counseling into routine diabetes care.
- Discuss family planning and effective contraception (with consideration of long-acting, reversible contraception) until treatment regimen and A1C are optimized for pregnancy.
- Reinforce importance of working toward A1C <6.5% to reduce the risk of complications

Preconception Planning

- For girls of childbearing potential provide:
  - Info on effective contraception or abstinence to prevent unplanned pregnancy.
  - Use developmentally appropriate educational tools
  - Enable adolescent girls to make well-informed decisions
  - Free preconception counseling resources tailored for adolescents are available at ADA
  - Include education about the risks of malformations associated with elevated glucose levels

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S321–S338

GLP-1 and Pregnancy

- Recommend to discontinue prior to pregnancy
- Semaglutide- d/c at least 2 months before a planned pregnancy
- Tirzepatide-d/c at least 1 month prior
- Several months may be more optimal to ensure glycemic goals are met
- Some concern on additional weight gain and LGA when it’s not stopped in advance

Gestational Weight Gain and Pregnancy Outcomes After GLP-1 Receptor Agonist Discontinuation

Jacqueline Maya, MD[1,2,3], Deepti Pant, MPH[4], Yiran Fu, BS[4], Kaitlyn James, PhD[3,5], Carolina Batlle, MS[1,6], Sarah Hsu, MS[1,7], Diana C. Soria-Contreras, PhD, MSc[1], Lydia Shook, MD[3,5], Christopher Mow, MS, BS[8], Marie-France Hivert, MD[1,3,9], Tanayott Thaweethai, PhD[3,4], Camille E. Powe, MD[1,3,5,7]

- Looked at women who took GLP-1 drugs and stopped pre or early pregnancy.
- Results: Among 149,790 pregnancies during the study period, 1,792 (448 exposed to GLP-1 and 1,344 unexposed) were matched for the primary analysis.
- GLP1RA-exposed pregnancies had greater gestational weight gain-of 3.26kg and higher risk of excess gestational weight gain (65% vs. 49%), gestational diabetes, hypertensive disorders in pregnancy and higher risk of preterm delivery.

Team Approach

- Interprofessional team approach
  - Endocrinology healthcare professional
  - Maternal fetal medicine specialist
  - Registered dietitian nutritionist
  - Diabetes care and education specialist
- Counsel on the risk of progression of diabetic retinopathy
  - Dilated eye exam before pregnancy and in 1st trimester, monitor every trimester and 1 year postpartum as recommended by eye care healthcare professional

31 year old with Type 1 Diabetes

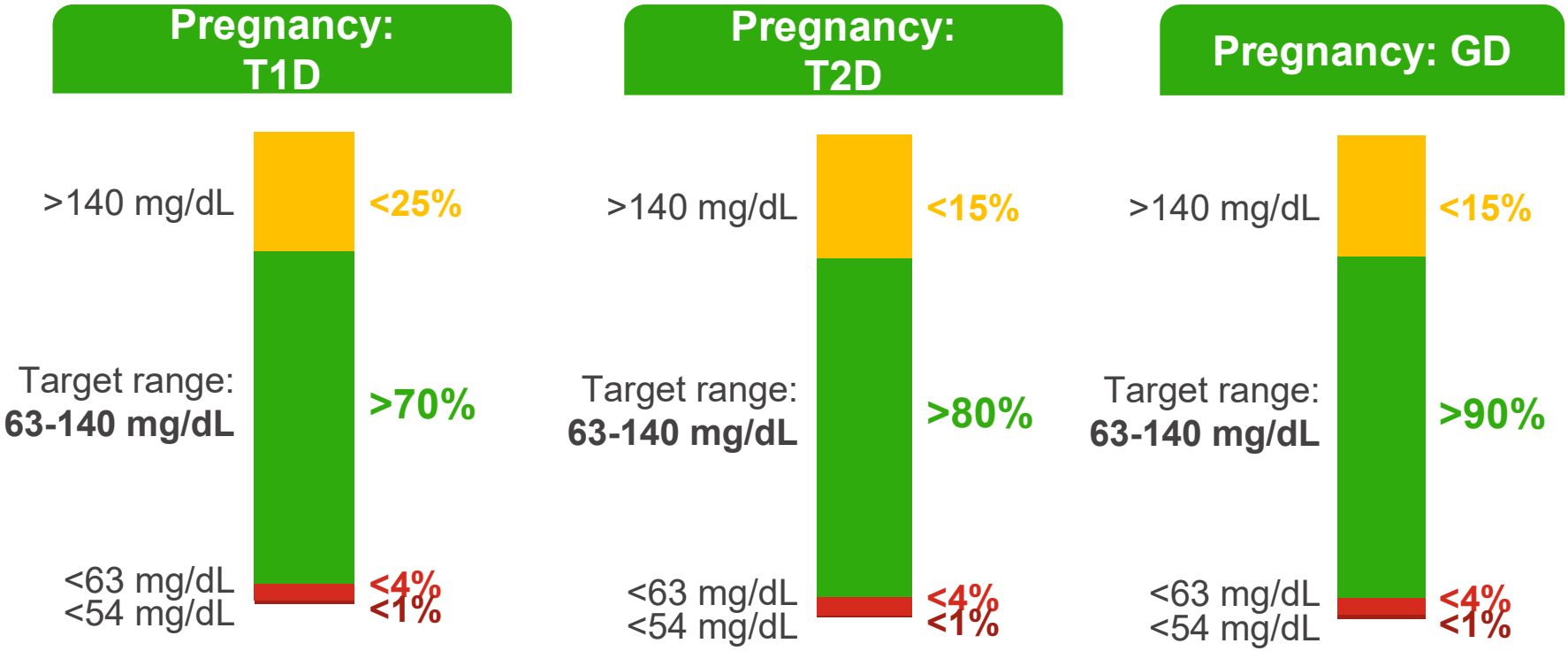
- Tells you I am ready to get pregnant.
- Uses an insulin pump and CGM.
- Also takes an ACE Inhibitor and statin.
- What is A1c target pre-pregnancy and any other recommendations?

Glucose Monitoring in Pregnancy

- Check FBG and 1 or 2 hour PPG
- Pre-existing type 1, need to also check premeal BG
- CGM can help to achieve A1C targets when used in addition to pre- and postprandial glucose monitoring
- Recommended for T1D and may be beneficial for other types of diabetes in pregnancy
  - Can reduce macrosomia and neonatal hypoglycemia in pregnancy complicated by type 1 diabetes.

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S321–S338

CGM targets in Pregnancy



Battelino T, et al. *Diabetes Care.* 2019;42(8):1593-1603.
Benhalima K, et al. *Lancel Diab*, 2025. doi: 10.1016/S2213-8587(25)00335-3

FDA Approved CGM in Pregnancy

Freestyle Libre 2 and 2+

Freestyle Libre 3 and 3+

Dexcom G7

Insulin Pumps in Pregnancy

- An option for intensive insulin therapy in pregnancy
- More customized insulin delivery although DKA risk if there is a pump failure
- AID systems with pregnancy specific glucose targets are recommended for T1D pregnancies (lack of approved systems in the US)
- AID systems without pregnancy specific targets may be considered for select pregnant individuals with T1D when used with assistive techniques and working with experienced healthcare teams
- Lack of data for T2D pregnancies and generally not used in GD due to the short duration of needing insulin

ADA. Diabetes Care 2026;49(Suppl. 1):S321–S338

Type 1 and Hypoglycemia

- Increased risk of hypoglycemia in first trimester
  - Due to altered counterregulatory response in pregnancy that may decrease hypoglycemia awareness.
- Education about prevention, recognition, and treatment of hypoglycemia is important before, during, and after pregnancy to help to decrease and manage the risk of hypoglycemia.
- Insulin resistance drops rapidly with delivery of the placenta (leads to hypo post delivery)

15. Management of Diabetes in Pregnancy: Standards of Care in Diabetes—2026 Diabetes Care 2026;49(Suppl. 1):S321–S338

Poll Question 6

- MR has type 1 diabetes and is trying to get pregnant. According to ADA Standards, which of the following medications should be stopped before pregnancy?

  A. Levothyroxine, labetalol

  B. Atorvastatin, Lisinopril

  C. Metformin, nifedipine

  D. Fluticasone, folic acid

Meds and Blood Pressure Target During Pregnancy

- Target B/P < 110-135/85
- **Meds contraindicated during pregnancy**
  - ACE inhibitors and Angiotensin Renin Blockers (ARB)
  - Statins (shared decision-making)
- **B/P Meds approved**
  - Methyldopa, nifedipine, labetalol, clonidine.
  - Other beta blockers except atenolol can be used

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Type 1 or 2 – Aspirin Therapy for Preeclampsia 100-150 mg daily

- People with type 1 or 2 have 2-4x's increased risk of preeclampsia during pregnancy.
  - Signs: HTN, Proteinuria, edema
  - Associated with decrease blood flow to fetus.
- Start aspirin therapy at 12-16 weeks until birth
  - US Preventive Task Force 2018 recommendations
  - Taking ASA reduces morbidity, saves lives and lowers health care costs

15. Management of Diabetes in Pregnancy: Standards of Care in D
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Pregnancy Care

- Prenatal Vitamins
  - At least 400-800 mg of folic acid
  - 150mg of potassium iodine
- Abstain from nicotine products, alcohol, and recreational drugs
- Screen for STD's, thyroid disorders, recommended vaccinations
- Careful review of prescription and nonprescription medications

31 year old with Type 1 Diabetes

- Uses an insulin pump and CGM, Time in Range
- Stop ACE Inhibitor and statin
- Other recommendations?
  - Find knowledgeable team
  - Monitor Blood Pressure and glucose with meter
  - Eye exam before and during each trimester
  - Prepare for glucose changes over each trimester and post delivery
  - Help with problem solving

Cholelithiasis in Pregnancy

- Cholelithiasis or gallstones is more common in pregnancy due to hormone changes
- Elevated estrogen increases cholesterol secretion and production leading to supersaturation of bile, while progesterone decreases bile acid secretion and impairs gallbladder motility resulting in biliary stasis.
- Increased risk with multiple pregnancies
- Obesity is a risk factor
- For **acute cholecystitis**, initial management includes IV hydration, symptom control with analgesia and antiemetics, and antibiotics, followed by laparoscopic cholecystectomy

Postpartum with *PreExisting DM*

- Meal plan adjustment for goals/needs
- Breastfeeding and BG balance
- Family planning
- Preconception counseling starts here
- Connect with long term follow up care
- Monitor for postpartum depression and provide support

Postnatal Health: Maternal Behavior

- For children: Breastfeeding decreases risk type 1 and type 2 and excess weight
- For parent:
  - Breastfeeding decreases diabetes risk by 50%.
  - Plus breastfeeding decreases blood pressure, risk of breast cancer and helps with weight management

Engaging and supporting

- Phases of Life
  - After Delivery

- Environment
  - Access to safe places to exercise
  - Access to healthy foods
  - Adequate paying job/finances
  - Access to health care / Postnatal care
  - Access to child care
- LifeStyle
  - Breast feeding
  - Weight management
  - Keeping Active
  - Choose healthy foods
  - Role model for children

Health Legacy –
Great opportunity to pass on your best for generations to come

- Healthy eating before and during pregnancy matters
- Keep Active
- Family planning
- Encourage active participation in care; before, during and after.

Thank You

- Questions? We are here to help!
- Email info@diabetesed.net
- Call 530/ 893-8635
- www.diabetesed.net