



Gestational Diabetes in 2025: Updates and Bedside Support

Kansas Perinatal Quality Collaborative

August 26, 2025

Denise Fryzelka PhD, CNM, APNP, FACNM

Objectives

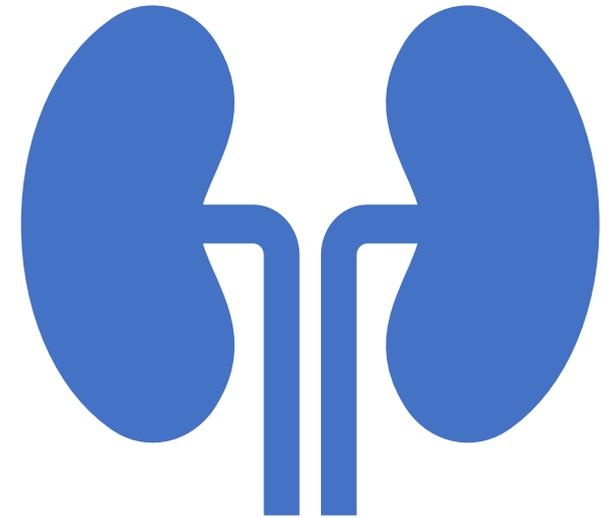
- Discuss Gestational Diabetes Mellitus (GDM): rates, outcomes, and management
- Discuss correlation between Severe Hypertension Disorders of pregnancy (SHDP) and GDM
- Counseling, treatment, and prevention of GDM/DM

GDM: Definition Incidence and Prevalence

- Hyperglycemia **first recognized** during pregnancy that does not meet criteria for overt diabetes.
- Most common metabolic complication of pregnancy, affecting 5–25% (commonly accepted to be 14%) of pregnancies globally (US also up to 14%)
- Prevalence varies by ethnicity, with higher rates observed among Native American, Asian, Hispanic, and African American populations compared to non-Hispanic White women.
- Incidence has been increasing in parallel with rising obesity and type 2 diabetes rates.

Screening for GDM

- Recommended screening at the first prenatal visit in those with risk factors to determine early abnormal glucose metabolism or Pre-Diabetes may identify individuals at higher risk for adverse outcomes
 - Hgb A1c
 - fasting glucose
- Universal rescreening for those not previously diagnosed with DM or Pre-Diabetes between 24 and 28 weeks of gestation (26 weeks + is better)
 - 1-step 75-g oral glucose tolerance test **or**
 - 2-step approach, with a 50-g glucose challenge and if elevate follow up with a 100-g



GDM diagnosis

- Pre-Diabetes:
 - Hgb A1c $\geq 5.7 - 6.4\%$
 - FBS 100-125 mg/dL
 - 2 hr blood glucose 140-199 mg/dL
- GDM
 - 1 step (75 gm): FBS (>92), 1-hr (>180), 2 hr > 153) mg/dL
 - 2step:
 - 1 hr GTT (50 g) ≥ 200 - 2nd step not indicated
 > 140 (130) **proceed to**
 - 3 hr GTT (100 g): FBS (<95), 1 hr (<180), 2 hr (<155), 3 hr (<140) mg/dL
 - 1 elevated value: 4 = diagnosis

Hypertension Disorders of Pregnancy (HDP)

- Chronic Hypertension (CHTN): B/P > 130/80 at two different time in early pregnancy
- Gestational Hypertension (GHTN)
 - SHDP: severe range B/P: sustained $\geq 160/110$ mm Hg
 - MHDP: mild range B/P: > 140/90 mm Hg at least 4 hours apart when no previous diagnosis of HTN
- Pre-eclampsia (PEC) w/wo severe features
- Eclampsia

HDP: Incidence and Prevalence

- Complicates up to 10% of pregnancies globally
- US: incidence of all HDPs—including GHTN, PEC, and eclampsia—has risen to approximately 10.2% (1,021 cases per 10,000 deliveries), with > 50% of these cases: PEC/eclampsia
- SHDP - specifically is less common than mild or moderate forms, however increased association with increased maternal and fetal morbidity and mortality.
- Expeditious treatment of SHDP recommended to reduce the risk of maternal complications: stroke, seizures, and death (American Heart Association)

Shared Risk factors for GDM and HDP

- Pre-pregnancy overweight or obesity (BMI>25)
- Excessive gestational weight gain current pregnancy
- Advanced maternal age
- Family history of preeclampsia (PEC) or hypertension
- Higher third-trimester HbA1c
- Elevated blood pressure at GDM screening one incidence or stage 1 (HTN, CHTN)
- Prior history of
 - Insulin resistance (IR) or glucose intolerance
 - GDM
 - pre-existing hypertension or early pregnancy HTN, CHTN
 - excessive gestational weight gain
 - macrosomia

Additionally:

GDM:

- Family history of type 2 diabetes or GDM
- Prior hx of polycystic ovary syndrome (PCOS)
- Certain racial/ethnic backgrounds
- Hypothyroidism and
- Low socioeconomic status

Correlation between GDM and HDP

- GDM is **strongly associated and correlated with**
 - **an increased risk of severe hypertension and all HDP** and is related to the degree of hyperglycemia and other comorbidities (ARR and OR ranging from 1.4 to 2.7 in large cohort studies and meta-analyses).
 - developing incident HTN PP even accounting for physiological stress and other confounders
 - higher mean BPs PP esp in those with poor metabolic profiles (higher BMI, fasting glucose, and blood pressure at GDM screening)
- Pathophysiological mechanisms such as IR, endothelial dysfunction, inflammation and angiogenic imbalance (elevated sFlt-1/PlGF ratio) contribute to the development of both GDM and HTN.

Risks of GDM

- spontaneous abortion
 - fetal anomalies
 - preeclampsia
 - fetal demise
 - macrosomia
 - neonatal hypoglycemia
 - neonatal hyperbilirubinemia
 - neonatal respiratory distress syndrome
 - Exposure to hyperglycemia in utero increases the risks of obesity, hypertension, and type 2 diabetes in offspring later in life
- 

Risks of HDP

Maternal (most occurring PP)

- stroke (especially hemorrhagic),
- eclamptic seizures,
- pulmonary edema,
- acute kidney injury,
- liver dysfunction (including HELLP syndrome),
- disseminated intravascular coagulation,
- placental abruption, and organ failure.
- maternal death
- increased risk of developing chronic hypertension,
- heart failure,
- coronary artery disease
- cerebrovascular disease
- women with preeclampsia have a 71% increased risk of cardiovascular disease mortality and a 4-fold increased risk of heart failure

Adverse fetal and neonatal outcomes

- preterm birth,
- low birth weight,
- intrauterine growth restriction (IUGR),
- stillbirth,
- early neonatal death
- increased neonatal intensive care unit (NICU) admission rates

Treatment for HDP

- Treatment initiation/titration of antihypertensive therapy (labetalol/nifedipine) in pregnant persons with GDM with of B/P threshold of 140/90 mmHg
- Aim for a target of 110–135/85 mmHg to reduce maternal risk without compromising fetal growth
- AP/IP treatment antihypertensives and magnesium sulfate



Healthcare
providers
should be
influencers

In order to **optimize maternal and fetal outcomes in pregnancy and awareness and prevention of HTN/DM later in life**

By vigilant monitoring and early intervention

By understanding the patient journey from diagnosis to counseling regarding health behavior modification and lifelong encouragement

Diagnosis

- Often the reactions are shock, fear, denial, anger
 - GDM is not a fail/pass situation
 - Present the diagnosis in a positive manner- denial or avoidance can have significant repercussions.
 - Present it as an opportunity to impact the pregnancy and the lifelong prognosis of the mom and the baby and the ability of the mom to do this-empowerment
 - Discuss the difficulty in hearing the diagnosis but also that this did not occur overnight- took years to develop insulin resistance (IR) and can take years to resolve but it can be reversed and T2DM can be avoided
 - Positive framing: “opportunity for healthy pregnancy” and opportunity for prevention of DM
 - Discuss the impact on the placenta and the recommendations for antenatal testing if unstable blood sugar control or not treating
 - Discuss the simple measures the pregnant person can take immediately -→ “Carpe Diem”

Support their Journey

- Understanding and address Patient Engagement Challenges (Real-World Barriers)
 - Limited time during prenatal visits
 - Complex medical language → health literacy gaps
 - Cultural/family dietary patterns and “buy-in” - make it personal
 - Emotional burden of diagnosis (fear, guilt, stigma)
 - Competing priorities (childcare, work, transportation)
- Learning –modification- lifestyle modification
- Adapting – building routines, family support
- Empowerment – confidence, healthy lifestyle for mom & baby
- Motivational Interviewing: explore values & goals
- Family involvement: partners in meal planning & activity
- Visual education: food models, apps, glucose tracking charts
- Celebrate small wins: reinforce progress, not just compliance

Management- Lifestyle modification



Nutrition – Way of Eating (WOE)



Weight management



Physical activity (PA)



Blood sugar monitoring

Nutrition and Physical Activity

- Protein is critical
- Carbohydrates – getting enough will happen by default (175 mg)
 - Portion sizes and restriction psychology
 - Carbohydrate-protein pairing
 - Protein in am and pm due to insulin resistance and liver -glucagon dumping at night - avoid late eating
- Fat is essential but also not a goal
- Ketones and ketoacidosis is not the same thing- one is normal utilization of fat for energy and the other is dangerous as an acidotic state
- Supplements to consider: vit D3, K2 and Magnesium glycinate
- Electrolytes supplementation (sodium, potassium and magnesium) is needed with increased intake of unprocessed foods
- Hydration
- Physical Activity: 30 min of exercise daily with greatest impact after meals

Blood Sugar Monitoring

- Self-monitoring of blood glucose 4 times/day FBS and post prandial x 3 (from first bite) is standard
- Glycemic targets are fasting glucose <95 mg/dL, 1-hour postprandial <140 mg/dL, and 2-hour postprandial <120 mg/dL
- A2GDM- insulin and/or po agents versus A1GDM- diet-controlled
- If glycemic targets are not met within 1–2 weeks, **insulin** is the preferred pharmacologic therapy (ADA), due to its efficacy and safety profile.
- Oral agents (metformin and glyburide) are not recommended as first-line therapy by the ADA because they cross the placenta and have uncertain long-term safety for offspring, though they are more commonly used in some regions
- Continuous glucose monitoring (**CGM**) is increasingly used and may improve glycemic control
 - optimal CGM targets for GDM are not yet established.

Often forgotten variables for normalizing blood sugar

- Sleep deprivation---need more
- Stressors ---need less
- Rationale for continuing Blood sugar monitoring with advancing GA- at least a week at 32, 34, 36, 38 weeks GA

Hospital and Intrapartum (IP) management

- Antepartum steroids (betamethasone) – consider risks/benefits
 - 2-fold increase for IP management in insulin needs for 5-7 days after initiation
- Goals of IP management: Stable blood sugar during the work of labor and birth for effective uterine function and neonatal transition
 - Labor is exercise with increased metabolic demands but can also elicit stress response affecting blood sugar results
 - Elevated maternal glucose contributes to neonatal hypoglycemia
 - Consider blood sugars for all DM/GDMs: on admission, postprandial and every 1-2 hours in labor (every 1 with insulin, every 2 regardless of eating) if $> 110-120$ consistently notify provider
 - Insulin titration - infusion vs SQ as needed

Postpartum: GDM follow up and screening

- Immediate postpartum
 - Stop insulin infusion
 - If Pre-DM or A2GDM- continue BS monitoring for 24 hours
- Benefits of breastfeeding- review
- Encourages weight loss and exercise benefits
- Postpartum, individuals with GDM– lifelong risk for DM 50-75%
 - 2 hr GLT screening for A1GDM or Pre-DM – diet controlled at 4-12 weeks PP (25-40% will have Pre-DM)
 - A2GDM or pre-existing DM, 2 hr GTT or appropriate evaluation at 1-2 weeks and 4–12 weeks
 - All ongoing surveillance every 1–3 years, as they have a markedly increased lifetime risk of type 2 diabetes.
 - Both lifestyle modification and metformin reduce progression to diabetes in this population
- Early PP screening for PreDM/DM
 - All pregnancy – GDM related hormones decrease by 1-2 days PP
 - Waiting 4-12 weeks is a pragmatic decision not EBP
 - Werner (UCSF) studies- benefits of early testing versus those that do/will not follow up

Case Study – Maria

- Patient: Maria, 32, first pregnancy
- Dx: GDM at 28 weeks
- Challenges: works night shifts, relies on fast food, anxious/guilty
- Strengths: supportive partner, highly motivated

- Discussion Questions:
 - 1. How can Maria fit healthier meals into her night shift schedule?
 - 2. What role can her partner play in daily support?
 - 3. Which tech/community resources could help reduce barriers?
 - 4. How do you address her feelings of guilt and fear?

Conclusion: GDM & HTN – A Dual Burden

- Shared risk factors: obesity, insulin resistance, inflammation
- Complications: preeclampsia, preterm birth, long-term CVD
- Nutrition: adequate-sodium, restricted or balanced carb-protein approach
- Stress reduction: yoga, breathing, mindfulness
- Enhancing sleep
- Safe activity: walking, prenatal exercise classes
- Family-centered education on cooking & lifestyle
- Team-based care: Pregnancy Healthcare provider + endocrinology + dietitian + behavioral health → integrated, holistic care

Key Takeaways

- Healthcare Provider Influence (HPI) comes from trust, empowerment, and context
- HPI is critical to sustainable behavior change
- Family + cultural support is critical to sustainable behavior change
- Focus on long-term health of both mother and baby
- Prevention of DM can begin with identification of GDM and sustained lifelong behavior modification learned and adapted in pregnancy

- Discussion
- Q&A

References

- [Pre-Pregnancy Obesity, Excessive Gestational Weight Gain, and the Risk of Pregnancy-Induced Hypertension and Gestational Diabetes Mellitus.](#) Lewandowska M, Więckowska B, Sajdak S. *Journal of Clinical Medicine*. 2020;9(6):E1980. doi:10.3390/jcm9061980.
- [Genetic and Epigenetic Factors in Gestational Diabetes Mellitus Pathology.](#) Ustianowski Ł, Udzik J, Szostak J, et al. *International Journal of Molecular Sciences*. 2023;24(23):16619. doi:10.3390/ijms242316619.
- [PREGNANCY DISORDERS AND MATERNAL CONSEQUENCES: Maternal Pre-Pregnancy Risks and Postpartum Consequences of Gestational Diabetes.](#) Storey KM, Shay L, Poteat T, Pennington KA, Schulz LC. *Reproduction (Cambridge, England)*. 2025;169(6):e250050. doi:10.1530/REP-25-0050.
- [Risk Factors for Gestational Diabetes: An Umbrella Review of Meta-Analyses of Observational Studies.](#) Giannakou K, Evangelou E, Yiallourous P, et al. *PloS One*. 2019;14(4):e0215372. doi:10.1371/journal.pone.0215372.
- [Prevalence and Predictive Risk Factors of Hypertensive Disorders in Pregnant Women at High Risk for Gestational Diabetes. The PREclampsia in Diabetic gestaTION \(PREDICTION\) Study.](#) Nicolì F, Citro F, Battini L, et al. *Journal of Endocrinological Investigation*. 2025;48(4):1033-1040. doi:10.1007/s40618-024-02520-1.
- [Brief Review: Hypertension in Pregnancy : A Manifestation of the Insulin Resistance Syndrome?.](#) Solomon CG, Seely EW. *Hypertension (Dallas, Tex. : 1979)*. 2001;37(2):232-9. doi:10.1161/01.hyp.37.2.232.
- [Update on Management of Gestational Diabetes Mellitus and the Role of Continuous Glucose Monitor Technology.](#) Lachaud A, Durnwald C. *Diabetes Technology & Therapeutics*. 2025;. doi:10.1089/dia.2025.0148.
- [Diagnosis and Classification of Diabetes: Standards of Care in Diabetes-2025.](#) *Diabetes Care*. 2025;48(Supplement_1):S27-S49. doi:10.2337/dc25-S002.
- [Management of Diabetes in Pregnancy: Standards of Care in Diabetes-2025.](#) *Diabetes Care*. 2025;48(Supplement_1):S306-S320. doi:10.2337/dc25-S015.
- [Oral Glucose-Lowering Agents vs Insulin for Gestational Diabetes: A Randomized Clinical Trial.](#) Rademaker D, de Wit L, Duijnhoven RG, et al. *JAMA*. 2025;333(6):470-478. doi:10.1001/jama.2024.23410.
- [Approach to the Patient Using Diabetes Technology in Pregnancy.](#) Dickens LT, Gonzalez MG. *The Journal of Clinical Endocrinology and Metabolism*. 2025;110(7):e2317-e2326. doi:10.1210/clinem/dgae914.

- [Hypertension in Pregnancy: Diagnosis, Blood Pressure Goals, and Pharmacotherapy: A Scientific Statement From the American Heart Association.](#) Garovic VD, Dechend R, Easterling T, et al. Hypertension (Dallas, Tex. : 1979). 2022;79(2):e21-e41. doi:10.1161/HYP.000000000000208.
- [Prehypertension Prior to or During Early Pregnancy Is Associated With Increased Risk for Hypertensive Disorders in Pregnancy and Gestational Diabetes.](#) Black MH, Zhou H, Sacks DA, et al. Journal of Hypertension. 2015;33(9):1860-7; discussion 1867. doi:10.1097/HJH.0000000000000646.
- [Guidelines for the Prevention of Stroke in Women: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association.](#) Bushnell C, McCullough LD, Awad IA, et al. Stroke. 2014;45(5):1545-88. doi:10.1161/01.str.0000442009.06663.48.
- [Hypertensive Complications of Pregnancy: A Clinical Overview.](#) Antza C, Cifkova R, Kotsis V. Metabolism: Clinical and Experimental. 2018;86:102-111. doi:10.1016/j.metabol.2017.11.011.
- [Angiogenic Imbalance and Inflammatory Biomarkers in the Prediction of Hypertension as Well as Obstetric and Perinatal Complications in Women With Gestational Diabetes Mellitus.](#) Lara-Barea A, Sánchez-Lechuga B, Campos-Caro A, et al. Journal of Clinical Medicine. 2022;11(6):1514. doi:10.3390/jcm11061514.
- [High Blood Pressure Before and During Early Pregnancy Is Associated With an Increased Risk of Gestational Diabetes Mellitus.](#) Hedderson MM, Ferrara A. Diabetes Care. 2008;31(12):2362-7. doi:10.2337/dc08-1193.
- [Epidemiology and Management of Gestational Diabetes.](#) Sweeting A, Hannah W, Backman H, et al. Lancet (London, England). 2024;404(10448):175-192. doi:10.1016/S0140-6736(24)00825-0.
- [Gestational diabetes.](#) National Library of Medicine (MedlinePlus)
- [State-of-the-Art Diagnosis and Treatment of Hypertension in Pregnancy.](#) Magee LA, von Dadelszen P. Mayo Clinic Proceedings. 2018;93(11):1664-1677. doi:10.1016/j.mayocp.2018.04.033.
- [Screening for Hypertensive Disorders of Pregnancy: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force.](#) Henderson JT, Webber EM, Thomas RG, Vesco KK. JAMA. 2023;330(11):1083-1091. doi:10.1001/jama.2023.4934.
- [Cardiovascular Considerations in Caring for Pregnant Patients: A Scientific Statement From the American Heart Association.](#) Mehta LS, Warnes CA, Bradley E, et al. Circulation. 2020;141(23):e884-e903. doi:10.1161/CIR.0000000000000772.