Dra. Maria del Carmen Gómez García.
Specialist in Family and Community Medicine. Vélez-Norte Health Center, Málaga. Member of the Primary Care Working Group of the SED. Member of the Diabetes Group of SEMFYC.

Dr. Luis Avila Lachica.
Specialist in Family and Community Medicine. Almachar Health Center, Málaga. Andalusian Coordinator of RedGDPS. Member of the Primary Care Working Group of the SED. Coordinator of the Steatosis Working Group of RedGDPS. Member of the Diabetes Group of SEMFYC.

Pharmacological management in women with gestational diabetes

Classically, gestational diabetes (GD) has been defined as any degree of glucose intolerance first recognized during pregnancy. However, because the current epidemics of obesity and diabetes have led to an increased number of pregnant women with previously undiagnosed type 2 diabetes (T2DM), the International Association of Diabetes and Pregnancy Study Groups (IADPSG) (1) and the American Diabetes Association (ADA) (2) consider diabetes diagnosed in the first trimester as "overt diabetes," reserving the term gestational diabetes for that diagnosed from the second trimester onward.

Pre-gestational diabetes (PGD) refers to women with diabetes diagnosed before pregnancy (including type 1 diabetes, type 2 diabetes mellitus, and other specific types).

GLYCEMIC TARGETS

Good glycemic control significantly reduces the risk of macrosomia, preeclampsia, cesarean delivery, neonatal hypoglycemia, and progression to type 2 diabetes postpartum.

The HAPO study highlighted the importance of maintaining adequate glycemic levels in pregnancy. Therefore, both fasting and—especially—postprandial capillary glucose self-monitoring is required, with the following targets (3):

Glucose targets	Fasting (basal)	1-hour postprandial	2-hour postprandial
	≤ 95 mg/dL	≤ 140 mg/dL	≤ 120 mg/dL

TREATMENT OF GESTATIONAL DIABETES

Lifestyle recommendations—diet and physical activity adapted to the patient's knowledge—are the first step in GD management. The goal of metabolic control is to correct weight deviations and maintain capillary glucose levels while always avoiding hypoglycemia and ketonuria. Recommended weight gain: 7–11 kg in overweight women, and 4.5–9 kg in women with obesity

Diet should be normocaloric, except in those with obesity. Moderate physical activity is recommended (≥ 150 minutes of moderate aerobic exercise per week) (2, 4-7).

WHEN TO INITIATE PHARMACOLOGICAL TREATMENT?

Studies suggest that 70–85% of women diagnosed with GD achieve control with lifestyle modification alone. Pharmacologic treatment is indicated only when glycemic targets are not met.

If after 1–2 weeks of lifestyle changes glucose remains above targets, insulin therapy should be initiated (2).

Available pharmacological options

1. **Insulin (first-line therapy). Insulin is the treatment of choice when lifestyle** modifications are insufficient. It is considered safe during pregnancy because it does not cross the placenta.

   Types of insulin

   - Rapid-acting insulin (lispro, aspart): controls postprandial peaks; administered before meals.
   - Intermediate-acting insulin (NPH): covers basal needs during the day, usually combined with rapid-acting insulin.
   - Long-acting insulin (glargine, detemir): provides stable basal coverage, usually combined with rapid-acting insulin.

   Doses are individualized based on pre- and postprandial glucose levels. Continuous glucose monitoring (CGM) is useful, especially in basal-bolus regimens. A typical starting regimen: 0.2–0.3 IU/kg/day of long-acting insulin, and, then, add rapid-acting analogues before meals as needed (start with 4 IU) (2, 4-7).

   Avoid hypoglycemia and minimize excessive weight gain.

   In a basal–bolus insulin regimen (basal + rapid-acting insulin), **continuous glucose monitoring (CGM)** is a useful and indicated tool.

2. **Metformin:** Metformin is useful as an alternative, especially when minimizing weight gain or reducing the risk of preeclampsia is a priority; however, caution is required due to the potential long-term effects on the child.

   It is an oral treatment option generally used in women at risk of developing type 2 diabetes (T2D) after pregnancy, or in those who cannot tolerate insulin or do not have access to insulin in their place of residence. Metformin reduces insulin resistance and decreases hepatic glucose production. It is more commonly used in women with GDM and overweight[1]. However, the Spanish Agency for Medicines and Medical Devices (AEMPS) only recommends the use of antidiabetic drugs within **authorized clinical trials**.

   The starting dose is 500 mg/day, with progressive titration up to 1000 mg every 12 hours to minimize adverse effects.

3. **Other glucose-lowering agents under investigation:** There are investigational medications that may offer alternatives to insulin, such as **GLP-1 receptor agonists**, which help lower glucose levels and improve insulin sensitivity. However, these agents are not yet recommended for routine management of GDM.

TECHNOLOGY AND EDUCATIONAL SUPPORT

- **CGM** improves glycemic control and hypoglycemia detection in insulin-treated GD.
- **Digital tools** *(apps, telemonitoring, coaching)* **offer additional support**.

OTHER RELEVANT TREATMENTS DURING GESTATIONAL DIABETES

1. **Blood pressure management**

»

Hypertension or preeclampsia may coexist with GD. Safe medications include:

- **Methyldopa** (first-line)
- **Labetalol**
- **Nifedipine (extended release)**

Contraindicated: ACE inhibitors (enalapril, captopril) and ARBs (losartan) due to teratogenic risk.

2. Safe analgesics and anti-inflammatories

Paracetamol is the analgesic/antipyretic of choice. Avoid NSAIDs (ibuprofen, naproxen, diclofenac) — especially in the 3rd trimester (risk of ductus arteriosus closure and reduced amniotic fluid).

3. Recommended vaccines during pregnancy (6, 8)

- **Influenza (inactivated):** any trimester during flu season

- **Tdap:** between 28–36 weeks, each pregnancy
- **COVID-19 (mRNA):** recommended if schedule incomplete
- **Anti-D immunoglobulin:** at week 28 and within 72 hours postpartum for Rh-negative mothers (if newborn is Rh-positive)

Contraindicated: live vaccines (MMR, varicella, yellow fever)

4. **Common supplements and coadjuvants** (2,4,8)

- **Folic acid:** 400 mcg/day, beginning 1–2 months before conception and through the first trimester
- **Potassium iodide:** 200 µg/day throughout pregnancy
- **Oral iron:** if iron-deficiency anemia (Hb <11 g/dL in 1st and 3rd trimesters; <10.5 g/dL in 2nd)
- **Levothyroxine:** Target TSH: < 2.5 mIU/mL in 1st trimester, < 3 mIU/mL in 2nd , < 3.5 mIU/mL in 3rd. TSH monitoring every 4–6 weeks until week 20, then at weeks 24 and 32[9].
- **Calcium and vitamin D:** if risk of preeclampsia or deficiency
- **Probiotics:** potential benefit but not standardized

DOES GESTATIONAL DIABETES REQUIRE FOLLOW-UP AFTER DELIVERY?

Yes. Because GD is a significant risk factor for developing T2D, all women should undergo reassessment 4–12 weeks postpartum (or after breastfeeding) using a 75-g oral glucose tolerance test. If normal and without other risk factors, reassessment should occur every 3 years.

The cumulative incidence rate of T2DM increases sharply in the first 5 postpartum years and plateaus after 10. D

CONCLUSIONS

1. Pharmacologic management in gestational diabetes aims to maintain maternal glucose within a safe range to prevent complications.
2. Glycemic targets: fasting <95 mg/dL; 1-hour postprandial <140 mg/dL; 2-hour postprandial <120 mg/dL.
3. Diet is the first-line treatment; if targets are not met, insulin is the therapy of choice. Metformin is an additional option in select cases.
4. A comprehensive approach is essential: lifestyle, emotional support, and postpartum follow-up.
5. Reassessment 4–12 weeks postpartum is recommended to detect persistent diabetes or impaired glucose regulation

REFERENCES

1. International Association of Diabetes and Pregnancy Study Groups Consensus Panel. International Association of Diabetes and Pregnancy Study Groups recommendations on the diagnosis and classification of hyperglycemia in pregnancy. Diabetes Care. 2010;33(3):676-82.
2. American Diabetes Association Professional Practice Committee. 15. Management of diabetes in pregnancy: Standards of care in diabetes—2025. Diabetes Care. 2025 Jan 11;48(Suppl 1):S306-S20.
3. HAPO Study Cooperative Research Group. Hyperglycemia and adverse pregnancy outcomes. N Engl J Med. 2008;358(19):1991-2002.
4. National Institute for Health and Care Excellence (NICE). Hypertension in pregnancy: diagnosis and management. NICE guideline [NG133]. 2019. Disponible en: https://www.nice.org.uk/guidance/ng133
5. Grupo de trabajo de consenso. Asistencia a la gestante con diabetes. Guía de práctica clínica actualizada en 2014. Av Diabetol. 2015;31(2):45-59.
6. Fundación RedGDPS. Abordaje integral del paciente con DM2 en enfermería y medicina [Internet]. 2019. Disponible en: https://www.redgdps.org/gestor/upload/colecciones/Guia%20de%20enfermeria_web.pdf
7. Sociedad Española de Ginecología y Obstetricia; Grupo Español de Diabetes y Embarazo. Diabetes mellitus y embarazo. Guía de práctica clínica actualizada 2021. Prog Obstet Ginecol. 2022;65(1):35-41. Disponible en: https://sego.es/documentos/progresos/v65-2022/n1/05%20Diabetes%20mellitus%20y%20embarazo__gpca__2021.pdf
8. Centers for Disease Control and Prevention (CDC); Advisory Committee on Immunization Practices (ACIP). Vaccination recommendations in pregnancy (influenza, Tdap, COVID-19). 2023. Disponible en: https://www.cdc.gov/vaccines/pregnancy
9. Alexander EK, Pearce EN, Brent GA, Brown RS, Chen H, Dosiou C, et al. 2017 Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and the postpartum. Thyroid. 2017;27(3): 315-89. doi: 10.1089/thy.2016.0457.