Interpretation results

Date: **01.06.2026**

User: **Female, 41 y.o.**

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Test type

Blood chemistry: carbohydrate metabolism, insulin resistance markers, lipid profile, liver enzyme.

Summary table of results

Marker	Result	Reference (from the form)	Status
Fasting glucose	114 mg/dL	70–99 mg/dL	HIGH
HbA1c	6.1%	< 5.7%	HIGH
Insulin, fasting	19 uIU/mL	2–17 uIU/mL	HIGH
HOMA-IR	5.3	< 2.7	HIGH
Total cholesterol	247 mg/dL	< 200 mg/dL	HIGH
LDL cholesterol	162 mg/dL	< 100 mg/dL	HIGH
HDL cholesterol	39 mg/dL	> 50 mg/dL for women	LOW
Triglycerides	204 mg/dL	< 150 mg/dL	HIGH
ALT	39 U/L	≤ 33 U/L	HIGH

Interpretation of deviations

Fasting glucose — 114 mg/dL

- Clinical meaning: Above the reference range. This may indicate impaired fasting glucose and increased risk of type 2 diabetes, especially with family history and abdominal excess weight.
- Possible causes: Insulin resistance, excess visceral fat, high intake of refined

carbohydrates/sugary foods, low physical activity, poor sleep, stress, or medications such as glucocorticoids if used.

HbA1c — 6.1%

- Clinical meaning: Elevated above the form reference. This level is commonly seen with impaired carbohydrate metabolism and increased diabetes risk.
- Possible causes: Chronic mild elevation of blood glucose over the past ~2–3 months. In your context, this fits with insulin resistance, sugar cravings, afternoon energy crashes, abdominal weight gain, and family history of type 2 diabetes.

Fasting insulin — 19 ulU/mL

- Clinical meaning: Mildly elevated. This suggests the body may be producing more insulin than usual to keep glucose controlled.
- Possible causes: Insulin resistance, commonly associated with abdominal excess weight, sedentary lifestyle, high-calorie/high-carbohydrate diet, sleep deprivation, and genetic predisposition.

HOMA-IR — 5.3

- Clinical meaning: Elevated, consistent with significant insulin resistance.
- Possible causes: Visceral adiposity, metabolic syndrome pattern, high refined carbohydrate intake, low muscle mass/low activity, poor sleep, stress, and family history of type 2 diabetes.

Total cholesterol — 247 mg/dL

- Clinical meaning: Elevated. This increases cardiovascular risk, especially together with high LDL, high triglycerides, low HDL, and impaired glucose metabolism.
- Possible causes: Insulin resistance, diet high in saturated/trans fats or excess calories, genetics, hypothyroidism, liver fat accumulation, kidney disease, or certain medications.

LDL cholesterol — 162 mg/dL

- Clinical meaning: Elevated “atherogenic” cholesterol. This is one of the main lipid markers linked to atherosclerosis risk.
- Possible causes: Genetic predisposition, diet, insulin resistance/metabolic syndrome, hypothyroidism, weight gain, or reduced physical activity.

HDL cholesterol — 39 mg/dL

- Clinical meaning: Low for a woman according to the form reference. Low HDL is often part of an insulin-resistance/metabolic syndrome pattern.
- Possible causes: Abdominal excess weight, high triglycerides, low activity level, smoking if applicable, high intake of refined carbohydrates, and insulin resistance.

Triglycerides — 204 mg/dL

- Clinical meaning: Elevated. This often rises with insulin resistance and can be associated

with fatty liver risk.
- Possible causes: Excess refined carbohydrates/sugars, alcohol intake, abdominal excess weight, insulin resistance, uncontrolled glucose metabolism, hypothyroidism, or genetic predisposition.

ALT — 39 U/L
- Clinical meaning: Mildly **elevated** liver enzyme. In this metabolic context, one common possibility is fatty liver disease, but other causes should also be considered.
- Possible causes: Non-alcoholic fatty liver disease associated with insulin resistance, alcohol intake, medications/supplements, viral hepatitis, recent intense exercise, or other liver/biliary conditions.

Combined assessment

The results show a consistent pattern of **insulin resistance with impaired carbohydrate metabolism**:

- Fasting glucose is **high**.
- HbA1c is **elevated**.
- Fasting insulin and HOMA-IR are **high**.
- Triglycerides are **high** and HDL is **low**.
- LDL and total cholesterol are **high**.
- ALT is mildly **elevated**.

Together with abdominal excess weight, afternoon energy crashes, sugar cravings, and family history of type 2 diabetes, this pattern may indicate **high risk for progression toward type 2 diabetes and metabolic syndrome**. The mild ALT elevation also raises the possibility of **fatty liver associated with insulin resistance**, though this requires confirmation.

This is not a final diagnosis, but it is clinically important and should be addressed proactively.

Recommended additional tests

- **Repeat fasting glucose and HbA1c** — to confirm the pattern and monitor progression.
- **Oral glucose tolerance test with insulin levels, if available** — to better assess glucose handling and insulin response after carbohydrate intake.
- **Comprehensive metabolic panel including AST, GGT, bilirubin, alkaline phosphatase** — to further evaluate liver function.
- **Liver ultrasound or FibroScan** — to assess for fatty liver if ALT remains **elevated** or risk is **high**.

- **TSH and free T4** — hypothyroidism can worsen cholesterol and weight gain.
- **Apolipoprotein B / ApoB** — better assessment of atherogenic particle burden, especially with **high** LDL and triglycerides.
- **Lipoprotein(a)** — genetically determined cardiovascular risk marker; usually checked once in adulthood.
- **High-sensitivity CRP** — optional marker of inflammation/cardiometabolic risk.
- **Urine albumin-to-creatinine ratio and creatinine/eGFR** — kidney risk screening in the setting of impaired glucose metabolism.
- **Blood pressure and waist circumference tracking** — important for metabolic syndrome assessment.

Which doctor to consult

- **Endocrinologist** — for insulin resistance, **elevated** glucose/HbA1c, diabetes-risk prevention, and discussion of treatment options.
- **Primary care physician / internist** — for overall cardiometabolic risk assessment and monitoring.
- **Cardiologist or lipid specialist** — may be appropriate because LDL is 162 mg/dL with **high** triglycerides and **low** HDL, especially with family history or other cardiovascular risk factors.
- **Gastroenterologist/hepatologist** — if ALT remains **elevated** or fatty liver is suspected/confirmed.

General recommendations

- **Weight reduction goal:** Even a 5–10% reduction in body weight can significantly improve insulin resistance, glucose, triglycerides, and liver fat.
- **Nutrition focus:**
- Reduce sugar, sweet drinks, juices, desserts, white flour, and frequent snacking.
- Prioritize protein at each meal: fish, poultry, eggs, Greek yogurt, legumes, tofu, lean meats.
- Increase fiber: vegetables, lentils/beans, berries, oats, chia/flax, whole grains in controlled portions.
- Choose healthy fats: olive oil, nuts, seeds, avocado; limit trans fats and excess saturated fat.
- Consider a Mediterranean-style or lower-glycemic eating pattern.

- **Meal structure for energy crashes:** Include protein + fiber + healthy fat at breakfast and lunch; avoid **high**-sugar/**high**-starch meals alone, which can trigger glucose/insulin swings and cravings.
- **Physical activity:**
- Aim for at least 150 minutes/week of moderate aerobic activity.
- Add resistance training 2–3 times/week to improve insulin sensitivity.
- A 10–15 minute walk after meals can reduce post-meal glucose spikes.
- **Sleep and stress:** Poor sleep and chronic stress can worsen insulin resistance and cravings. Aim for consistent sleep timing and 7–9 hours if possible.
- **Alcohol:** If consumed, reduce or avoid, especially with **high** triglycerides and **elevated** ALT.
- **Medication discussion:** Given HbA1c/glucose pattern and lipid abnormalities, discuss with a physician whether lifestyle alone is sufficient or whether medications such as glucose-risk prevention therapy and/or lipid-lowering therapy are appropriate.

Important: This decoding is preliminary. Reference values are taken from your form. Consult a physician for diagnosis.