Clinical Decision Support Report

Patient: Sample Patient Age: 47 years Sex: Male Focus: Longevity & healthspan optimization

CLINICAL QUESTION
Can this patient take tesamorelin? Will he benefit?

Confidence: 78% · Requires clinician review before action

1 · KEY FINDINGS

- Known G6PD deficiency — oxidative-stress vulnerability requiring medication/food/chemical precautions and hemolysis monitoring.
- Lab pattern reported: low RBC/HGB/HCT with elevated MCV, consistent with macrocytic anemia (etiology not provided).
- Iron studies abnormality: elevated serum iron and ferritin — suggests iron loading / inflammation / hemolysis rather than simple iron deficiency.
- Asymptomatic, prevention-focused; no chronic-disease history reported, but history is patient-reported and not clinician-verified.
- No medication or supplement list available — clinically relevant given G6PD exposure risks and possible macrocytosis contributors.

ABNORMALITIES

- Macrocytic anemia: decreased RBC/HGB/HCT with increased MCV.
- Elevated iron and ferritin (iron-overload signal vs. acute-phase response / hemolysis recycling).

G6PD deficiency plus macrocytic anemia with elevated iron/ferritin raises a flag for red-cell stress or impaired erythropoiesis rather than simple iron deficiency. Macrocytosis also points to B12/folate deficiency, alcohol/liver effects, thyroid dysfunction, or marrow stress — clarifying the driver matters before any longevity intervention that could increase metabolic demand.

2 · RANKED DIFFERENTIAL DIAGNOSIS

Macrocytic anemia, unspecified, with iron-overload pattern

ICD-10 D53.9 · 50% likely

Low RBC/HGB/HCT with increased MCV plus elevated iron and ferritin is not typical of iron deficiency. Raises concern for B12/folate deficiency, alcohol-related marrow toxicity, hypothyroidism, liver disease, medication effect, myelodysplasia, or hemolysis. Despite “no symptoms,” this is a clinically significant incidental finding requiring workup before any GH-axis optimization.

Other acquired hemolytic anemias (possible episodic hemolysis in G6PD deficiency)

ICD-10 D59.8 · 18% likely

Known G6PD deficiency raises risk of oxidative-triggered hemolysis; anemia is present though hemolysis markers were not provided. Reticulocytosis can artifactually raise MCV; high ferritin can reflect iron recycling post-hemolysis. Needs a hemolysis panel and reticulocyte count.

Hypothyroidism, unspecified (incl. consideration of central hypothyroidism)

ICD-10 E03.9 · 12% likely

Knowledge base emphasizes thyroid assessment as first-line (TSH + free T4) and notes risk of missed central hypothyroidism. Hypothyroidism can cause macrocytosis and the dyslipidemia/weight changes that often motivate “optimization” therapies.

Alcoholic / other chronic liver disease causing macrocytosis and hyperferritinemia

ICD-10 K70.9 · 10% likely

Macrocytosis and elevated ferritin can occur with alcohol use and liver disease. Lifestyle (alcohol) and LFTs were not provided — a common, high-yield cause to rule in or out.

Myelodysplastic syndrome, unspecified

ICD-10 D46.9 · 6% likely

Less common at 47, but must be considered with unexplained macrocytic anemia, especially if persistent or with other cytopenias. If anemia persists after nutritional/endocrine/liver/hemolysis causes are excluded, hematology evaluation is indicated.

3 · RECOMMENDATIONS

Defer tesamorelin (GHRH analog) until anemia/macrocytosis and thyroid status are clarified

Evidence: Mechanistic rationale — KB has no tesamorelin-specific evidence for this case

Tesamorelin raises endogenous pulsatile GH to IGF-1, but GH/IGF-1 activation can mask underlying drivers of fatigue/body composition and may be inappropriate with unrecognized disease. The biology to address first is the unexplained macrocytic anemia.

Levothyroxine (T4) only if hypothyroidism confirmed — standard of care, not a peptide

Evidence: Human RCT / observational (standard endocrine therapy)

If hypothyroidism is present, replacing T4 normalizes thyroid signaling, improving erythropoiesis (may help macrocytosis), lipid metabolism, and energy — addressing a root driver that can mimic “low vitality.”

4 · RECOMMENDED WORK-UP

1. Repeat CBC with differential and RBC indices — confirm macrocytosis and degree of anemia.
2. Peripheral blood smear — macro-ovalocytes, hypersegmented neutrophils, schistocytes; platelet/WBC review.
3. Reticulocyte count and index — distinguish hypoproliferation from hemolysis.
4. Hemolysis panel — LDH, haptoglobin, total and indirect bilirubin.
5. Vitamin B12, folate (RBC folate), methylmalonic acid, homocysteine.
6. Iron studies with transferrin saturation (TSAT); repeat ferritin.
7. Liver panel — AST/ALT, GGT, ALP, bilirubin.
8. Thyroid — TSH + free T4 as first-line (knowledge-base supported); free T3 if indicated.
9. Metabolic risk — hs-CRP, fasting glucose/insulin, HbA1c, lipids with ApoB and Lp(a).
10. G6PD enzyme activity confirmation — avoid testing during acute hemolysis (false-normal risk).
11. If ferritin/TSAT persistently elevated — HFE testing for hereditary hemochromatosis.

5 · SAFETY FLAG — G6PD DEFICIENCY

G6PD deficiency — Medication / exposure flag — not an allergy

G6PD deficiency is not an allergy, but it matters when selecting medications or interpreting symptoms such as sudden fatigue, jaundice, dark urine, pallor, shortness of breath, or unexplained anemia. The patient should disclose it to clinicians, dentists, urgent-care clinicians, and pharmacists before starting new medications, and avoid known oxidative triggers. Medication-avoidance lists and severity interpretation must be confirmed by a licensed clinician.

6 · CLINICAL VALIDATION

Defer tesamorelin (GHRH analog)	Allergy PASS · Contraindication PASS
Levothyroxine (T4) if hypothyroidism confirmed	Allergy PASS · Contraindication PASS

WARNINGS

- This is an AI-generated analysis. Always consult a qualified healthcare professional.
- The primary issue is not “optimization” — an abnormal lab signal (macrocytic anemia with elevated iron/ferritin) requires evaluation before elective peptide protocols.
- Tesamorelin: the knowledge base contains no tesamorelin-specific safety/efficacy evidence for this case; any use would be off-label and should not proceed without full screening.
- G6PD deficiency: maintain strict avoidance of oxidative triggers and educate the patient on hemolysis warning signs; verify all supplements/OTCs.

Deferring tesamorelin is prudent: it is FDA-approved only for HIV-associated lipodystrophy and is otherwise off-label/investigational, can worsen glucose tolerance, and may unmask endocrine pathology — so anemia/macrocytosis and thyroid status should be clarified first. Levothyroxine is standard of care only with confirmed hypothyroidism. Monitor CBC with indices, B12/folate ± MMA/homocysteine, reticulocytes, and TSH/free T4.

7 · EVIDENCE SOURCES

EndoManual
Tier 1 · relevance 0.90
“The first approach to differential diagnosis of thyroid disorders is the measurement of free T4 and TSH.”

Hypothyroid_symptoms_and_the_likelihood_of_HT
Tier 1 · relevance 0.80
“Diagnosis was verified if patients had sustained hypothyroidism three weeks or later and/or T4 substitution therapy was initiated.”

GHRH_and_cognition (Arch Neurol, RCT)
Tier 1 · relevance 0.72
“Participants were randomized 1:1 to 1.0 mg/d of tesamorelin (GHRH) or placebo subcutaneously 30 minutes before bedtime for 20 weeks.”

SUMMARY

A 47-year-old male presents for longevity optimization and asks whether to start tesamorelin. The dominant clinical signal is not “optimization” but an unexplained macrocytic anemia with elevated iron and ferritin, compounded by known G6PD deficiency. The recommendation is to defer tesamorelin — off-label here and not anchored to knowledge-base evidence — and first clarify the anemia and thyroid status through the targeted work-up below. Levothyroxine is reserved for confirmed hypothyroidism. Confidence is moderate (78%); the analysis is flagged for clinician review.