

THE 160+ MARKER DECODER · SEE WHAT YOUR BLOODWORK COULD ACTUALLY LOOK LIKE

Apex. Decoded.

A free guide to the 160+ blood markers your annual physical isn't measuring. With a full sample report so you can see what your results would actually look like.

MARKERS

160+

SYSTEMS

9

COST

Free

AN OPTML FIELD GUIDE

Your yearly physical is measuring *one-eighth of you.*

Your yearly physical runs about 30 numbers. A basic metabolic panel (14). A lipid panel (4). A CBC (12). Maybe a thyroid screen and a vitamin D. **Thirty numbers — for a body made of 37 trillion cells.**

Honestly, that's diagnostic by candlelight. It works fine when something is already broken. It does very little if you want to *understand* the system before something breaks.

The Apex Panel runs **160+ markers in a single draw.** It maps nine connected body systems instead of three. No other direct-to-patient blood panel runs more markers. Every Apex Panel comes with a written read-out from a U.S.-licensed clinician. Concierge longevity clinics charge many times the OPTML price for the same depth of testing.

This guide does two things. First, it walks you through what the Apex Panel measures. Plain English, system by system. Second, the new part: **it shows you a full sample report.** You see exactly what your results would look like.

You can't fix what you can't measure. Most adults are walking around with no idea what their body is actually doing. This guide is how that changes.

— The OPTML Team

OPTML.HEALTH

Plain English. *Hard science.*

Every fact comes from published medical studies or major doctor-group guidelines. Look for small numbers in **yellow boxes** like this ¹. Each one points to a source. Every source is listed at the end with a clickable link.

The words are simple. The science is not. Pictures and tables show the most important things fast. Read the bold lines. Look at the charts.

This guide covers four things:

- **Why your annual physical isn't enough.** The history and the math.
- **What the Apex Panel measures.** Nine systems, 160+ markers, in plain English.
- **What your results would actually look like.** A full sample report walkthrough.
- **What to do with the information.** Testing cadence and next steps.

EDUCATIONAL ONLY · NOT MEDICAL ADVICE

This guide shares what real studies and clinical guidelines have found about lab markers. **It does not diagnose, treat, or recommend any therapy.** A licensed clinician must read your Apex Panel results. They use your personal medical history to make sense of the numbers. **Individual results vary.**

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IF YOU SKIM ONLY TWO SECTIONS

Read **Chapter 1** (the problem) and **Chapter 9** (the sample report). The rest fills in the picture.

The annual physical was designed for *a different disease era.*

Doctors built today's standard lab panels in the 1970s. ¹ They catch active disease. Diabetes once you have diabetes. Kidney failure once your kidneys are failing. They don't catch the slow 10-to-20-year slide that causes most adult chronic disease. ²

Side by side: standard vs Apex.

STANDARD ANNUAL PHYSICAL

~**30** markers

A basic metabolic panel (14 markers). A lipid panel (4). A CBC (12). Maybe a thyroid screen. Built to catch what's **already broken**. ³

OPTML APEX PANEL

160+ markers

Full hormone panel. Advanced cholesterol. Insulin sensitivity. Inflammation. Nutrient status. Liver, kidney, blood. Built to show **direction** — where you're trending, not just where you broke.

Why your doctor doesn't run more.

Insurance pays for the basic panel. Anything else needs a medical reason your insurance will pay for. "I want to feel optimal" doesn't count. So the most useful markers don't get run. ³

This is not your doctor's fault. It's how the system is set up. Insurance covers diagnosis and treatment of disease. It does not cover the longer arc of understanding.

What Apex isn't. Apex doesn't replace your annual physical. It doesn't diagnose anything on its own. It gives you and your provider **more data to work with**. A U.S.-licensed clinician reviews every panel and walks you through what it means for you.

What "normal" actually means on your lab report.

Here's the second trap. When your lab report says "normal," your number sits inside a range. That range comes from a huge group of average adults. But 60% of American adults have a chronic disease. ⁴ So the "normal" range gets pulled toward the sick end.

Reference range vs optimal range.

Most labs use a **reference range**. Your lab's vendor sets it, based on the people they tested. That's not the same as an **optimal range**. The optimal range is where studies say people live longest and feel best. ⁵

Examples your standard lab will call "normal" that an optimization-minded clinician might flag: ⁵ ⁶

MARKER	LAB "NORMAL"	OPTIMAL STUDIES CITE	DIFFERENCE
Fasting glucose	≤ 99 mg/dL	70–85 mg/dL	Big
HbA1c	≤ 5.6%	≤ 5.3%	Moderate
Vitamin D	≥ 30 ng/mL	40–60 ng/mL	Big
hs-CRP	≤ 3.0 mg/L	≤ 1.0 mg/L	Big
Ferritin (men)	22–322 ng/mL	80–150 ng/mL	Big
Testosterone (men)	≥ 264 ng/dL	500+ ng/dL	Big

The bottom line. You can have a lab report that says "all normal" and still be running well below where studies suggest people feel and function best. That gap is what Apex is built to show — to you and to your provider.

Important framing. "Optimal" is not a diagnostic line. It's where studies on health and well-being say people do best. Your licensed clinician decides what's right for your body.

The Apex Panel maps *nine connected systems*.

The body doesn't operate as separate parts. Your hormones talk to your blood sugar. Your blood sugar talks to your cholesterol. Your inflammation talks to your hormones. The Apex Panel measures all nine major systems in one draw so the picture stays whole. ⁷

01

Heart & Metabolism

Cholesterol, blood sugar, insulin — the system that decides if and when you have a heart attack.

~30 MARKERS

02

Hormones

Testosterone, estrogen, DHEA, SHBG, cortisol — the chemical messengers that run everything else.

~20 MARKERS

03

Thyroid

TSH, free T3, free T4, antibodies — the metabolism dial. Often missed by standard panels.

~6 MARKERS

04

Inflammation

hs-CRP, homocysteine, fibrinogen — the silent driver behind most age-related disease.

~8 MARKERS

05

Liver

ALT, AST, GGT, bilirubin, albumin — your filter for everything you eat, drink, and breathe.

~12 MARKERS

06

Kidney & Electrolytes

Creatinine, BUN, eGFR, sodium, potassium — the second filter and the body's salt balance.

~14 MARKERS

07

Blood & Immune

Full CBC with differential — red cells, white cells, platelets, oxygen-carrying capacity.

~25 MARKERS

08

Nutrients & Minerals

Vitamin D, B12, folate, ferritin, magnesium, omega-3 — are you actually absorbing what you eat.

~15 MARKERS

09

Longevity & Biological Age

ApoB, Lp(a), GlycA, advanced markers — where the longevity science is moving.

~12 MARKERS

Why the count adds to 160+, not 142. A single category like "Blood & Immune" includes dozens of sub-markers (neutrophils, lymphocytes, eosinophils, MCH, MCHC, MPV, etc.). The 160+ count is the total individual values reported.

Why the systems must be read *together*, not apart.

One marker on its own can mislead. The real skill is reading the whole panel. How the systems talk to each other. Three quick examples of why one number isn't enough. ⁸

01 "Normal" total testosterone with high SHBG.

A man's total testosterone reads 600 ng/dL. Looks fine. But his SHBG is 90 nmol/L. He has very little usable testosterone. He'll feel like a man with a total T of 250. The Apex Panel measures total T, free T, and SHBG together so the picture matches the symptoms. ⁹

02 "Normal" LDL with elevated ApoB.

Standard cholesterol panels measure LDL by weight. Modern cardiology counts the particles instead (ApoB). Particle count predicts heart attack risk better than weight does. A patient can have "normal" LDL and a dangerously high ApoB. Apex measures both. ¹⁰

03 "Normal" fasting glucose with elevated fasting insulin.

Insulin resistance comes before type 2 diabetes. It shows up in high fasting insulin *years* before glucose rises. A standard panel only measures glucose. A complete panel measures insulin too. Insulin is the early warning system. ¹¹

A single marker tells you a number. **The whole panel tells you a story.**

This is why Apex includes a clinician read-out. A 160-marker spreadsheet is overwhelming. A 30-minute call with a U.S.-licensed clinician walks you through your numbers. That's what you get.

Every marker, by category. *Part 1.*

The full Apex menu. Every single marker on every panel. The point isn't to memorize the list. It's to see, in one place, what a real **complete** panel looks like.

Heart & Metabolism

Total Cholesterol · LDL · HDL · Non-HDL · Triglycerides · ApoB · Apolipoprotein A-1 · Lp(a) · VLDL · LDL particle number · LDL particle size · Small LDL · HDL2 · HDL3 · Cholesterol/HDL ratio · Triglyceride/HDL ratio · Fasting Glucose · HbA1c · Fasting Insulin · C-peptide · HOMA-IR (calculated) · HOMA-B (calculated) · Adiponectin · Leptin · Uric Acid

Hormones

Total Testosterone · Free Testosterone (calculated) · Bioavailable Testosterone · SHBG · DHEA-Sulfate · Estradiol · Progesterone · Pregnenolone · Cortisol · DHT · LH · FSH · Prolactin · IGF-1 · Insulin-like Growth Factor Binding Protein 3

Thyroid

TSH · Free T3 · Free T4 · Reverse T3 · Thyroid Peroxidase Antibodies (TPO) · Thyroglobulin Antibodies

Inflammation

High-sensitivity CRP · Homocysteine · Fibrinogen · GGT · Ferritin · ESR · Uric Acid

Note on "calculated" markers. Some markers (like HOMA-IR, free testosterone, bioavailable testosterone) aren't measured directly. Math equations calculate them from other markers. The equations come from published research. Apex reports both the direct and calculated values where it can.

Every marker, by category. *Part 2.*

Liver

ALT (SGPT) · AST (SGOT) · Alkaline Phosphatase · GGT · Total Bilirubin · Direct Bilirubin · Indirect Bilirubin · Total Protein · Albumin · Globulin · Albumin/Globulin Ratio · FIB-4 Score (calculated, liver fibrosis)

Kidney & Electrolytes

Creatinine · BUN · BUN/Creatinine Ratio · eGFR · Cystatin C · Sodium · Potassium · Chloride · Bicarbonate (CO₂) · Calcium · Ionized Calcium (calculated) · Magnesium · Phosphorus · Anion Gap · Osmolality (calculated)

Blood & Immune (Full CBC With Differential)

White Blood Cell Count · Red Blood Cell Count · Hemoglobin · Hematocrit · MCV · MCH · MCHC · RDW · Platelet Count · MPV · Neutrophils · Lymphocytes · Monocytes · Eosinophils · Basophils · Neutrophil/Lymphocyte Ratio · Reticulocyte Count · Absolute Counts for each

Nutrients & Minerals

25-Hydroxy Vitamin D · Vitamin B12 · Folate (RBC) · Vitamin A · Vitamin E · Vitamin K · Magnesium (RBC) · Zinc · Copper · Selenium · Iron · Total Iron Binding Capacity (TIBC) · Transferrin Saturation · Omega-3 Index · Omega-6/Omega-3 Ratio

Longevity & Biological Age

ApoB · Lp(a) · GlycA · hs-CRP · Homocysteine · Fasting Insulin · HbA1c · Albumin · ALP · AST/ALT ratio · MCV · RDW · PhenoAge (calculated) · Biological Age (calculated)

If you're counting: the categories above list 142 named markers. The 160+ total comes from the calculated and sub-marker reports that come with several of the categories (e.g., a CBC with differential reports both absolute counts and percentages for each white blood cell type).

Optional add-ons your provider *may suggest*.

The Apex Panel is the standard 160+ markers. A clinician may recommend add-on testing too. It depends on your symptoms, history, or what your baseline panel shows. Add-ons are not part of the standard Apex Panel. They're available through OPTML.

Common add-ons.

ADD-ON TEST	WHEN A CLINICIAN MIGHT SUGGEST IT
Heavy metals panel	Suspected exposure, persistent fatigue, neurological symptoms (lead, mercury, cadmium, arsenic)
Cortisol rhythm (4-point salivary)	Stress patterns, sleep issues, suspected adrenal involvement
Food sensitivity (IgG)	Unexplained GI, skin, or inflammation symptoms — note: clinical utility is debated
Comprehensive stool panel	Persistent GI issues, suspected gut microbiome involvement
Galleri (Grail) cancer screen	High-risk family history, age over 50, interest in early-detection screening
DUTCH hormone panel	Complex hormone questions, suspected estrogen metabolism issues
Coronary CT calcium score	Strong family heart disease history, elevated ApoB/Lp(a) on baseline panel

Add-ons are not for everyone. The standard Apex Panel covers what most patients need each year. Add-ons make sense when something in your baseline panel calls for a closer look. Same with your clinical history. Your provider helps you decide.

Coming up: Chapters 4 through 8 walk through the key markers in each system. Plain English. What your provider is actually looking for. Chapters 9 and 10 show a full sample report. You'll see exactly what your results would look like.

This system decides *when you have your heart attack. If at all.*

Heart disease is the #1 killer of adults in the developed world. ¹² The standard lipid panel (total cholesterol, LDL, HDL, triglycerides) was built in the 1960s. ¹⁰ Modern cardiology has moved on. The markers below are what cardiologists actually use today.

The three markers that matter most.

MARKER #1

ApoB

— mg/dL

Optimal: < 80 (low-risk)

ApoB counts the actual number of harmful cholesterol particles in your blood. In studies, **ApoB predicts heart attack risk better than standard LDL.** ¹⁰ Almost no standard physical includes it.

MARKER #2

Lp(a)

— nmol/L

Test once in your life

Lp(a) is genetic. It is one of the strongest single predictors of early heart attack. Once in your life, you should know your number. ¹³ Most adults never do.

MARKER #3

Fasting Insulin

— µIU/mL

Optimal: < 8

Fasting glucose only rises after years of insulin resistance. Fasting insulin shows the problem **5–10 years earlier.** ¹¹ Almost never run on a standard panel.

Why your standard cholesterol panel can mislead.

Your standard panel reports LDL by weight (LDL-C). Two people can have the same LDL-C but very different particle counts. The one with more, smaller particles has higher heart attack risk. ¹⁰ The Apex Panel reports ApoB and particle size next to the standard markers. Your provider sees the whole picture. Not just the headline number.

The bottom line on this system. ApoB, Lp(a), and fasting insulin together give a much earlier and more accurate picture of cardiovascular and metabolic risk than the standard cholesterol panel. All three are included in every Apex Panel.

Hormones are how your body *talks to itself*. Most panels miss the conversation.

Standard care often measures TSH and total testosterone, then stops. ¹⁴ That's like hearing one side of a phone call. Apex measures the whole hormone conversation in one draw.

For men — the markers that decide how you feel.

MARKER #1

Total Testosterone

— ng/dL

Reference: 264–916

The headline number. The U.S. lab range is wide. Most middle-aged men land in the lower third. ⁹

MARKER #2

Free Testosterone

— pg/mL

The usable kind

Most testosterone in your blood is bound and unusable. Free T is what your cells can actually use. ⁹
Symptoms often track to free T, not total T.

MARKER #3

SHBG

— nmol/L

Reference: 10–57

SHBG is the protein that binds testosterone. High SHBG can mean low free T even when total T looks normal. ⁹

For women — the markers that decide what stage you're in.

Estradiol · Progesterone · FSH · LH · DHEA-S · Total Testosterone · Free Testosterone · SHBG · Thyroid full panel. Read together, these markers show your provider where you are in the menopause transition. Premenopause, perimenopause, or postmenopause. They also show which hormone changes are driving your symptoms. ¹⁵

The thyroid story is similar. A standard panel measures TSH alone. The Apex Panel measures TSH, free T3, free T4, reverse T3, and thyroid antibodies — the full thyroid system. Two people with the same TSH can have very different actual thyroid function. ¹⁶

What hormone numbers don't do. A hormone panel does not diagnose hormone deficiency on its own. A licensed clinician reads your numbers alongside your symptoms, history, and exam. Only then do they make any diagnosis or treatment call.

The fire you can't feel — *but your arteries can.*

Chronic low-grade inflammation drives a lot of age-related disease.¹⁷ Heart disease, type 2 diabetes, Alzheimer's, autoimmune conditions, and many cancers all share inflammation as a root cause.¹⁷ ¹⁸ A standard panel measures almost none of it.

The four inflammation markers Apex runs.

MARKER

hs-CRP

— mg/L

Optimal: < 1.0 mg/L

High-sensitivity C-reactive protein is the most-studied inflammation marker. High hs-CRP links to higher risk of heart disease, stroke, and diabetes.¹⁸ Cheap, easy, and skipped by standard panels.

MARKER

Homocysteine

— μmol/L

Optimal: < 8

An amino acid that builds up when your body isn't using B vitamins well. High homocysteine links to heart and brain risk.¹⁹ Often fixable with B vitamins.

MARKER

Fibrinogen

— mg/dL

Reference: 200–400

A clotting factor that rises with inflammation. Elevated fibrinogen is associated with higher cardiovascular risk independent of cholesterol.²⁰

MARKER

Ferritin

— ng/mL

Optimal: 80–150 (men), 50–100 (women)

Iron storage protein — but also rises sharply with inflammation. Read together with the iron panel to tell the two apart.²¹

Why this section matters. Inflammation is the quietest driver of long-term disease. You usually can't feel it. By the time you feel it, the damage is years deep. The Apex Panel finds it before you'd notice.

The cellular machinery and *the filters*. Both in detail.

Modern diets are full of calories but often short on key nutrients. ²² You can be overweight and undernourished at the same time. The Apex Panel measures the nutrients adults most often run low on. A standard physical skips most of them.

The four nutrients most adults are short on.

NUTRIENT

Vitamin D (25-OH)

— ng/mL

Optimal: 40-60

About 42% of U.S. adults are deficient. ²³ Low D is linked to lower muscle strength, worse mood, and weaker immune function.

NUTRIENT

Vitamin B12

— pg/mL

Optimal: > 500

B12 deficiency is common over age 50 and in adults on certain medications (metformin, PPIs). ²⁴ Low B12 mimics dementia symptoms in older adults.

NUTRIENT

Magnesium (RBC)

— mg/dL

RBC magnesium is more accurate than serum

Estimated 50% of U.S. adults are short on magnesium. ²⁵ Low Mg is linked to worse sleep, higher blood pressure, and more muscle cramps.

NUTRIENT

Omega-3 Index

— %

Optimal: ≥ 8%

The percentage of omega-3 in your red blood cells. Higher index is associated with lower cardiovascular and cognitive risk. ²⁶ Most American adults run 4-6%.

The two filters: liver and kidney.

The Apex Panel includes a complete liver panel (12 markers) and a complete kidney panel (15 markers including electrolytes). These markers show how well your filters are working. They catch early problems long before symptoms show up. ²⁷

Why the filters matter. Liver and kidney problems are mostly silent until late stages. Flag mild rises in ALT, AST, or creatinine early. Lifestyle changes can reverse them. Catch them late and they become chronic disease. The Apex Panel runs the full filter panels every time.

Your calendar age is fixed. *Your biological age is not.*

Your calendar age is one measure of how old you are. It's not always the most useful one. Biological age comes from your blood markers. It predicts how long and how well you'll live better than birthday age does. ²⁸ The Apex Panel runs the markers used in the most studied biological age formulas.

The biological age markers Apex tracks.

Researchers cite one biological age score more than any other. It's called **PhenoAge** (Levine et al, 2018). ²⁹ It uses nine standard lab markers to estimate biological age:

MARKER	WHAT IT CAPTURES
Albumin	Liver protein, nutritional status
Creatinine	Kidney function, muscle mass
Glucose	Metabolic health
hs-CRP	Inflammation
Lymphocytes (%)	Immune function
MCV	Red blood cell health
RDW	Red blood cell variability — strong mortality predictor
Alkaline Phosphatase	Liver and bone health
White Blood Cell Count	Immune function, low-grade inflammation

Every Apex Panel includes all nine PhenoAge inputs. Your report shows your PhenoAge next to your calendar age. You see if you're aging slower, faster, or about the same. ²⁹

The other longevity-relevant markers.

The Apex Panel also reports **ApoB, Lp(a), GlycA, fasting insulin, HbA1c, omega-3 index, and vitamin D**. Longevity research says these are the most useful markers for adults who want to live longer and better. ^{28 30}

Biological age is one data point. A PhenoAge score is useful as a baseline and a trend over time. It is not a diagnostic tool. It does not predict your individual lifespan. But it does give you and your provider a useful way to see if your changes are working.

Meet Marcus. *This is what his Apex Panel looks like.*

The next four pages show you a full sample Apex Panel report. We built it around a made-up character. Meet Marcus, age 42. You'll see exactly what your results would look like and how a clinician walks through them.

△ IMPORTANT — READ BEFORE YOU CONTINUE

Marcus is a made-up character. He is not a real patient. His name, details, lab values, and story are all built to teach. We made them to show common patterns we see across our patients. Not to stand in for any one real person. **His findings and outcomes are for learning only.** They are not a prediction of what your panel will find. **Individual results vary a lot** based on age, sex, medical history, genetics, lifestyle, and dozens of other things. Whether Apex Panel testing is right for you is a call you make with a licensed clinician.

Meet Marcus.



Marcus · 42 · Composite

SOFTWARE ENGINEER · MARRIED · TWO KIDS · FEELS "FINE"

"I'm not sick. I just don't feel like I used to. My doctor ran my labs and said everything's normal. So why am I tired all the time?"

What his standard physical found.

Marcus had his annual physical six months ago. His doctor ran the standard 30-marker panel. The result, as the doctor told him: *"Everything looks normal. See you next year."*

Standard panel highlights: total cholesterol 195, LDL 120, HDL 48, fasting glucose 96, HbA1c 5.5%, TSH 2.1, total testosterone 410, vitamin D 28. **All technically inside reference ranges.**

What's next. The following three pages show what Marcus's Apex Panel surfaced — using the same blood draw, with 130 additional markers measured. The point isn't that his results predict yours. The point is to see what a complete panel looks like and how a clinician walks through it.

The Apex Panel report. *Heart, metabolism, and hormones.*

■ IN OPTIMAL RANGE
 ■ BORDERLINE / MONITOR
 ■ OUTSIDE OPTIMAL

PATIENT (COMPOSITE)		COLLECTED		PANEL	
Marcus · M · 42		Sample Report		OPTML Apex (160+)	
▲ SAMPLE REPORT · COMPOSITE PATIENT · FOR EDUCATIONAL REFERENCE ONLY					
HEART & METABOLISM	Total Cholesterol	195	mg/dL · < 200	GOOD	
	LDL Cholesterol	120	mg/dL · < 100 optimal	BORDERLINE	
	HDL	48	mg/dL · > 40 (men)	OK	
	Triglycerides	155	mg/dL · < 100 optimal	BORDERLINE	
	ApoB Better predictor than LDL	112	mg/dL · < 80 optimal	HIGH	
	Lp(a) Genetic — test once	85	nmol/L · < 75 desirable	ELEVATED	
	Fasting Glucose	96	mg/dL · 70-99 normal	HIGH-NORMAL	
	HbA1c	5.5%	< 5.7 normal · < 5.3 optimal	HIGH-NORMAL	
	Fasting Insulin Early metabolic warning	14	μIU/mL · < 8 optimal	HIGH	
	HOMA-IR (calculated)	3.3	< 1.5 optimal	INSULIN RESISTANT	
HORMONES	Total Testosterone	410	ng/dL · 264-916 ref	LOW-NORMAL	
	Free Testosterone The usable kind	6.8	pg/mL · 9-25 optimal range	LOW	
	SHBG	52	nmol/L · 10-57 ref	HIGH-NORMAL	
	DHEA-Sulfate	180	μg/dL · 100-600 ref	LOW-NORMAL	
	Cortisol (AM)	18	μg/dL · 6-23 ref	NORMAL	
	TSH	2.1	μIU/mL · 0.4-4.5 ref	NORMAL	
	Free T3	2.9	pg/mL · 2.3-4.2 ref	LOW-NORMAL	

What you're seeing. Marcus's standard panel said "all normal." His Apex Panel — same blood draw — shows three red flags in cardiometabolic and one in hormones, plus several "borderline" markers a clinician would want to discuss. The next page continues with inflammation, nutrients, and biological age.

Marcus's panel. *Inflammation, nutrients, longevity.*

PATIENT (COMPOSITE)		COLLECTED		PANEL
Marcus · M · 42		Sample Report		OPTML Apex (160+)
⚠ SAMPLE REPORT · COMPOSITE PATIENT · FOR EDUCATIONAL REFERENCE ONLY				
INFLAMMATION	hs-CRP	3.4	mg/L · < 1.0 optimal	HIGH
	Homocysteine	11.8	μmol/L · < 8 optimal	ELEVATED
	Fibrinogen	310	mg/dL · 200-400 ref	NORMAL
	GGT	42	U/L · < 40 optimal	BORDERLINE
NUTRIENTS	Vitamin D (25-OH)	22	ng/mL · 40-60 optimal	DEFICIENT
	Vitamin B12	385	pg/mL · > 500 optimal	LOW-NORMAL
	Magnesium (RBC)	4.2	mg/dL · 4.6-6.4 optimal	LOW
	Omega-3 Index	4.1%	≥ 8% optimal	LOW
	Ferritin	220	ng/mL · 80-150 optimal	HIGH-NORMAL
LIVER & KIDNEY	ALT	38	U/L · < 30 optimal	BORDERLINE
	AST	28	U/L · < 30 normal	NORMAL
	Creatinine	1.0	mg/dL · 0.7-1.2 ref	NORMAL
	eGFR	94	mL/min · > 90 normal	NORMAL
BIOLOGICAL AGE	PhenoAge Levine et al, 2018	46.2	Calendar age: 42	+4.2 YRS

▲ REMINDER — COMPOSITE PATIENT

All values shown are for a **made-up character (Marcus)** built to show common patterns. They are not real patient data. Your panel will look different. **Individual results vary a lot.** A licensed clinician reads every real Apex Panel.

What a clinician sees when they read *Marcus's full panel*.

Reading 160+ markers is a 30-minute conversation. Not a glance at a chart. Here's what a clinician would walk Marcus through after reading his report. These are the patterns the numbers form together.

The seven patterns the panel surfaced.

01

EARLY INSULIN RESISTANCE

Fasting insulin 14, HOMA-IR 3.3 — the metabolic warning standard glucose missed.

02

ELEVATED CARDIO RISK

ApoB 112 + Lp(a) 85 — heart attack risk standard LDL underestimated.

03

LOW USABLE TESTOSTERONE

Total T looks fine. Free T is genuinely low.

04

CHRONIC INFLAMMATION

hs-CRP 3.4 + homocysteine 11.8 — the fire he can't feel.

05

VITAMIN D DEFICIENT

22 ng/mL — well below 40–60 optimal. Tied to mood, energy, immunity.

06

LOW OMEGA-3 INDEX

4.1% — well below 8% optimal. Tied to higher cardiac risk.

07

BIOLOGICAL AGE +4.2

PhenoAge says Marcus's biology is running 4 years older than the calendar.

08

LIVER STRESS (MILD)

ALT 38, GGT 42 — borderline. Worth watching alongside the metabolic picture.

None of these are emergencies. They're not diseases yet. They're the early warning patterns. Give them 10–20 years and they become the diseases standard panels catch. Catch them at 42 and you have decades to act. Catch them at 60 and you don't. ²

△ REMINDER — COMPOSITE PATIENT

Marcus and these findings are **made up to teach**. Your panel will show different patterns. **Apex does not diagnose disease.** A licensed clinician reads every real panel and talks next steps with the patient.

How a clinician walks through *next steps* with a patient.

Once a clinician sees these patterns, the conversation moves on. *What do we do? In what order? What do we re-test in three months?* This is the part most patients never get. Because most patients never see a panel this complete.

A clinician's typical framing for a composite case like Marcus.

This is not a treatment plan for any specific reader. It's an example of the *conversation* a clinician has with a real patient when their panel looks similar.

01 Start with what's free and safe.

A clinician may suggest vitamin D supplements (with retest in 3 months). Magnesium glycinate at night. A fatty fish or omega-3 supplement to bump up the omega-3 index. None need a prescription. All are low-risk for most healthy adults. A clinician confirms it's safe for your situation.

02 Address the insulin resistance behaviorally.

Insulin resistance at HOMA-IR 3.3 in a 42-year-old responds well to behavior change. The clinician's first ask: 7+ hours of sleep. 7,000+ steps a day. Two strength sessions a week. Protein at 0.8–1.0 g per pound of goal weight. Eat fewer refined carbs. ³¹

03 Discuss the ApoB / Lp(a) cardiac picture.

Lp(a) is genetic. Lifestyle won't change it much. ApoB of 112 in a 42-year-old with these other markers opens a long-term risk talk. Diet. Exercise. Maybe a statin or another cholesterol drug. That depends on family history and how much risk Marcus wants to carry.

This is a clinician call based on the full picture.

04 Look at the hormone picture in context.

Free testosterone is genuinely low. Some of that may improve as Marcus fixes sleep, weight, and insulin resistance. All three drag testosterone down. The typical approach: fix the foundation first. Retest in 90 days. Have the testosterone talk only if numbers haven't moved. ⁹

05 Re-test what's moving in 90 days.

Vitamin D, magnesium, fasting insulin, HOMA-IR, hs-CRP, and homocysteine all respond to lifestyle and supplements in 8–12 weeks. ApoB and Lp(a) move slower. The next panel checks what's moving and what isn't.

△ REMINDER — COMPOSITE WALKTHROUGH

This walkthrough is **made up to teach**. Real treatment calls involve a real licensed clinician. A real patient's full medical history. A real physical exam. And a real talk about goals and how much risk feels right. Apex does not prescribe anything. A licensed clinician does. **Individual results vary.**

Test once a year. *Re-test what's moving.*

A single panel is a snapshot. A series of panels is a trend line. The Apex Panel gets more useful the second time you run it. Now you see direction. Not just status.

A typical cadence for adults running a panel as part of their care.

YEAR 0 Baseline panel Full 160+ markers. Establishes where you are right now. Identifies any patterns worth addressing.	+ 3 MONTHS Targeted re-test If any markers were flagged, re-run only the ones that change within 8–12 weeks. Vitamin D. Magnesium. hs-CRP. Fasting insulin.	+ 6 MONTHS Second targeted re-test Confirm trends are holding. Discuss with your clinician whether to adjust the plan.	+ 12 MONTHS Full annual panel All 160+ markers again. Now you have a trend line, not a snapshot. Slower-moving markers (ApoB, Lp(a), PhenoAge) come into view.
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What moves fast vs slow.

MARKER	HOW FAST IT CAN SHIFT	WHAT MOVES IT
Vitamin D	4–12 weeks	Supplementation, sun exposure
Magnesium	4–8 weeks	Supplementation, leafy greens
hs-CRP	4–12 weeks	Lower body fat, better sleep, fewer refined carbs
Fasting Insulin / HOMA-IR	8–16 weeks	Weight loss, sleep, exercise, lower carb intake
Free Testosterone	12–24 weeks	Better sleep, weight loss, strength training
HbA1c	12 weeks (it's a 3-month average)	Sustained metabolic changes
ApoB	12–24 weeks	Diet, exercise, sometimes medication
Lp(a)	Genetic — does not meaningfully shift	Test once. Manage other risk factors around it.
PhenoAge (biological age)	12+ months	Composite of all the markers above

How to order. Visit optml.health and choose Lab Panels in the menu. Not sure where to start? Take the quiz first: optml.health/quiz — it's 90 seconds, no email required to take it.

Disclosures, scope, and what this guide *is and isn't*.

This guide is for adults who want to understand what a complete blood panel measures. And how a clinician walks through one. It is not a prescription. Not a diagnosis. Not a replacement for care from a licensed clinician.

What this guide is.

A plain-English guide to the markers in the OPTML Apex Panel. The systems they map. The studies behind what each marker tells a clinician. Every clinical statement is footnoted to a real source.

What this guide is not.

- **Not medical advice.** Deciding to test, what to test, and how to read the results requires a licensed clinician. One who has reviewed your medical history.
- **Not a diagnostic tool.** A blood panel does not diagnose disease on its own. A licensed clinician reads results alongside your symptoms, history, and exam. Only then do they make any diagnosis.
- **Not a treatment plan.** The walkthrough of "next steps" for Marcus is illustrative. Real treatment plans require a real clinician and a real patient conversation.
- **Not a guarantee of any outcome. Individual results vary a lot** based on age, sex, genetics, medical history, lifestyle, and dozens of other things. Your results will look different from the sample shown.

About the sample report.

▲ IMPORTANT — ABOUT MARCUS AND THE SAMPLE REPORT

Marcus is a made-up character. He is not a real patient. His name, details, lab values, and findings are all built to teach. We made them to show common patterns we see across our patients. Not to stand in for any real person. Not to predict your results. The sample report is for **learning only**. The "next steps" walkthrough shows the kind of conversation a clinician might have with a patient whose panel looks similar. It is not a treatment plan for any reader. **Individual results vary a lot.** If you order an Apex Panel, your results will differ. A U.S.-licensed clinician will walk you through what they mean for you.

About OPTML and the Apex Panel.

OPTML offers the Apex Panel as a 160+ marker lab service through partner laboratories. Blood draws happen at one of thousands of partner lab locations across the United States. A U.S.-licensed clinician reviews your results. You get a written read-out. **The Apex Panel is a lab service, not a treatment.** Whether testing is right for you is a call you make with a clinician. What to do with the results — same.

EDUCATIONAL ONLY · NOT MEDICAL ADVICE

This guide does not diagnose, treat, prescribe, or recommend any therapy for any specific reader. We share lab markers, optimal ranges, and the sample report only for learning. **Individual results vary a lot.** Every choice about testing, reading results, supplements, medications, or lifestyle requires a licensed clinician. One who has your medical history.

For medical emergencies, call 911 or go to your nearest emergency department. Your OPTML provider is a partner in your care, not an emergency service.

Every study cited in this guide — *click to read the source.*

Each numbered citation corresponds to a yellow-boxed superscript in the chapters. Most are peer-reviewed journal articles indexed on PubMed; a few are major clinical society position statements or U.S. government publications. Click any link to open the source.

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About these citations. Every clinical claim in this guide is tied to a peer-reviewed source or a major clinical society guideline. Sources are listed above with clickable links. The Marcus sample report and lab values are illustrative composites, not citations.

The difference between feeling fine and being optimal is information.

No direct-to-patient blood panel runs more markers than the OPTML Apex. 160+ markers. Nine connected systems. One blood draw. A U.S.-licensed clinician reviews every panel. You get a written read-out and a 30-minute call about what your numbers mean for you.

You can't fix what you can't measure. Most adults have never seen a panel this complete. That's how that changes.

→ **optml.health/quiz**

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