

METABOLIC HEALTH: THE FOUNDATION OF HEALTH AND LONGEVITY PART 1 - [What Is Metabolic Health, and Why Does It Matter?](#)

Your Weekly Newsletter

by Dr. Nick Sieveking

August 19, 2026



Before we dive into this week's topic, a quick update on our red light therapy device giveaway! We had such a great response and we will be drawing the lucky winner next week. Thanks to the enthusiastic participation, you can look forward to even more exciting giveaways in the future!

Metabolic health is arguably one of the most important drivers of health span and longevity.

Metabolic dysfunction—including insulin resistance, obesity, type 2 diabetes, dyslipidemia, hypertension, and fatty liver disease—is deeply intertwined with many of the chronic diseases responsible for the greatest burden of illness, disability, and premature death.

Over the next three weeks, we are going to break down the complex topic of metabolic health into its essential components. We will explore what defines good metabolic health, the consequences of poor metabolic health, the testing we use to identify metabolic dysfunction, and the comprehensive approach we take at **Ageless Solutions** to optimize metabolic health and, when possible, reverse metabolic disease.

Along the way, we will highlight a real patient story, **Patient X**, from **Ageless Solutions** that demonstrates how identifying and addressing metabolic dysfunction can profoundly change the trajectory of a person's health.

At the Core

Metabolism is the collection of chemical processes that allow your body to convert food into energy and use that energy to sustain life. It supports essential functions including breathing, circulation, digestion, movement, temperature regulation, cellular repair, and waste removal.

Metabolism has two primary components:

- **Catabolism:** The breakdown of complex substances—such as carbohydrates, fats, and proteins—into simpler molecules, releasing energy.
- **Anabolism:** The use of energy to build and maintain complex molecules and tissues needed for growth, repair, and normal body function.

What Does “Metabolic Health” Mean?

Metabolic health refers to how effectively your body produces, stores, and uses energy. A metabolically healthy body can maintain blood sugar, insulin, blood pressure, cholesterol, triglycerides, and body fat within healthy ranges. It also retains **metabolic flexibility**—the ability to switch efficiently between carbohydrates and fat as fuel, depending on energy needs and availability. Glycogen = your body's storage of Glucose.

WHEN DOES THE BODY PREFER TO USE CARBOHYDRATES AS FUEL?

KEY TIMES AND CONDITIONS THAT TRIGGER CARB USAGE

						
FIRST THING IN THE MORNING	AFTER EATING A MEAL	DURING HIGH-INTENSITY EXERCISE	DURING MENTAL OR COGNITIVE DEMAND	WHEN GLYCOGEN STORES ARE LOW (SHORT TERM)	DURING STRESS OR HIGH CORTISOL SITUATIONS	DURING SHORT-DURATION, HIGH-INTENSITY ACTIVITY
After an overnight fast, glycogen stores are partially depleted and cortisol is higher. The body uses carbs to quickly restore energy and get the day started.	When carbohydrates are consumed, blood glucose rises and insulin increases, signaling the body to use carbs as the primary source of energy and to replenish glycogen stores.	High-intensity or explosive activities (sprinting, HIIT, weightlifting, athletic competition) rely on carbohydrates for quick energy and performance.	The brain's preferred fuel is glucose. During stressful tasks, long study sessions, or mental fatigue, carbs help maintain focus, reaction time, and cognitive performance.	When glycogen stores are low but intensity is high, the body will use available carbs to quickly restore energy and maintain performance.	Physical or emotional stress increases cortisol and adrenaline, which drive the liver to release glucose. Carbs become the fastest, most efficient fuel to handle the demand.	For activities under ~60–90 minutes at high intensity, carbohydrates are the most efficient and sustainable fuel.



KEY POINT:

Carbohydrates are the body's fastest and most efficient fuel for high-demand situations—especially when quick energy, power, or mental performance are required. They spare fat, preserve muscle, and help you perform at your best.

WHEN DOES THE BODY WANT TO USE FAT AS FUEL?

KEY TIMES AND CONDITIONS THAT TRIGGER FAT BURNING

						
AFTER AN OVERNIGHT FAST	DURING A FAST	DURING LOW TO MODERATE EXERCISE	WHEN CARB INTAKE IS LOW	BETWEEN MEALS	DURING REST & RECOVERY	DURING ENDURANCE ACTIVITY
During sleep (especially after 8–12 hours without eating), glycogen stores in the liver deplete, and the body shifts to burning fat for energy.	As fasting continues (12+ hours), insulin drops and stored body fat becomes the primary energy source. The longer the fast, the more fat is used.	At lower intensities and longer durations, especially in a fasted state, the body prefers fat for fuel. High-intensity exercise relies more on carbs.	On low-carb or ketogenic diets, glycogen stores stay low, so the body adapts to using fat and ketones for fuel.	In the few hours after a meal is digested and absorbed, insulin falls and the body can tap into fat stores for energy.	At rest, especially with adequate sleep and low stress, metabolism favors fat oxidation (burning fat).	Long-duration activities (like hiking, biking, or steady-state cardio) increase fat utilization over time.



KEY POINT: Fat burning is not “on” or “off”—it’s a spectrum. The more adapted you are (through diet, fasting, exercise, and sleep), the more efficiently your body will choose fat as its primary fuel source.

Health Conditions Associated With Poor Metabolic Health

When metabolic health begins to decline, the effects can extend far beyond blood sugar derangements or weight gain. Poor metabolic health is associated with a broad range of conditions, including:

Category	Associated Conditions
Blood Sugar & Insulin	Insulin resistance, pre-diabetes, and type 2 diabetes
Weight & Body Composition	Excess visceral (abdominal) fat and obesity
Liver Health	Fatty liver disease
Cardiovascular Health	High blood pressure; elevated triglycerides and abnormal cholesterol levels; cardiovascular disease, heart attack, and stroke
Inflammation	Chronic inflammation
Sleep	Sleep apnea
Hormonal & Reproductive Health	Polycystic ovary syndrome (PCOS); hormonal dysfunction; impaired fertility; erectile dysfunction
Kidney Health	Chronic kidney disease
Muscle & Physical Function	Loss of muscle mass, strength, and physical performance
Energy	Chronic fatigue
Brain & Cognitive Health	Cognitive decline and dementia
Immune Health	Impaired immune function
Cancer Risk	Increased risk of several forms of cancer
Aging & Longevity	Accelerated biological aging

THE METABOLIC HEALTH CONTINUUM

From Optimal Health to Diabetes



Poor metabolic health often develops gradually—sometimes years before a person meets formal diagnostic criteria for Metabolic syndrome or Diabetes.

This is why early recognition and intervention matter.



Lifespan Effect of Diabetes

The number of years of life lost is not fixed. It depends strongly on diabetes type, age at onset, glycemic exposure, renal and cardiovascular disease, smoking, blood pressure, lipid management, body weight, access to care, and socioeconomic factors.

Type 2 Diabetes

A useful U.S.-relevant estimate is:

At age 50, a person with type 2 diabetes has, on average, about 6 fewer years of life expectancy than a comparable person without diabetes

Earlier diagnosis has a much larger impact. Using U.S. mortality rates, a 50-year-old who was diagnosed at:

- Age 30: about 14 years shorter life expectancy
- Age 40: about 10 years shorter
- Age 50: about 6 years shorter

Each decade earlier in diagnosis was associated with approximately 3–4 additional years of life-expectancy loss

U.S. Burden at a Glance

Condition	U.S. statistic
Insulin resistance	About 42.1% of U.S. adults age 18–44 met the study definition of insulin resistance in NHANES 2007–2018; prevalence was 40.3% in 2015–2018.
Prediabetes	115.2 million U.S. adults age ≥ 18 have prediabetes.
All diabetes	40.1 million Americans have diagnosed or undiagnosed diabetes (12.0% of the total population).
Type 1 diabetes	2.1 million people have diagnosed type 1 diabetes: 1.8 million adults age ≥ 20 and 314,000 children/adolescents.
Type 2 diabetes	Approximately 90%–95% of diagnosed diabetes cases are type 2.

Source: [NIH/PMC](#); Source: [CDC Diabetes Statistics](#); Source: [CDC Diabetes Statistics](#);

Source: [CDC Type 1 Diabetes](#); Source: [CDC Type 2 Diabetes](#)

Read this recent statement from a new patient at **Ageless Solutions**:

“I’ve always been skinny and can eat anything I want and not gain weight. Why are my insulin levels elevated?”

You Cannot Judge Metabolic Health by Looking in the Mirror



- **Nearly 1 in 4 “normal-weight” American adults are metabolically unhealthy**
- **15–25% of adults with a BMI below 25 have metabolic abnormalities**
- An analysis of NHANES 2009–2016 found that less than 10% of U.S. adults met criteria for optimal metabolic health

Arch Intern Med. 2008 Aug 11;168(15):1617-24. doi:
[10.1001/archinte.168.15.1617](https://doi.org/10.1001/archinte.168.15.1617). PMID: 18695075. [PubMed](#)

Some of our thinnest patients, particularly those with poor dietary and exercise habits, are among those furthest along the continuum of metabolic dysfunction. They may look healthy on the outside while significant metabolic disease is quietly developing on the inside.

What Is Metabolic Syndrome?

Metabolic syndrome is a clinical diagnosis defined by the presence of three or more of the following metabolic abnormalities:

1. Waist circumference greater than 40 inches in men or 35 inches in women
2. Triglycerides of 150 mg/dL or higher
3. HDL cholesterol below 40 mg/dL in men or below 50 mg/dL in women
4. Fasting blood glucose of 100 mg/dL or higher
5. Blood pressure of 130/85 mm Hg or higher



Metabolic dysfunction rarely begins the day someone meets the criteria for metabolic syndrome. The embers are often smoldering years before the smoke becomes visible. That is why understanding family history and testing early—before traditional markers become abnormal—are so critical.

- **“Metabolic syndrome” and “metabolic health” are not synonymous.**
- Metabolic syndrome is not merely a collection of lab values or measurements.
- It is a warning sign that the body’s ability to regulate energy, glucose, fat storage, and inflammation is becoming impaired—raising the risk of chronic disease over time.
- **Metabolic syndrome detects the phenotype relatively late.**
- A person can have significant metabolic dysfunction without meeting 3 or more criteria.
- Metabolic Syndrome is **a useful minimum screening framework for metabolic health rather than a definition of metabolic health itself.**
- Metabolic syndrome tells us when metabolic dysfunction has become clinically visible. A comprehensive metabolic-health assessment attempts to identify the dysfunction before it reaches that point.

Relative Risk Associated With Metabolic Syndrome

Comparison group (without metabolic syndrome) standardized to 1.0x.

Health outcome	Without metabolic syndrome	With metabolic syndrome	Relative increase
Heart attack (MI)	1.0x	1.99x	99% higher
Stroke	1.0x	1.60–1.70x	60–70% higher
Cancer – all types combined	1.0x	~1.2–1.3x	~20–30% higher
Retinopathy	1.0x	~2.5x	~150% higher
All-cause dementia	1.0x	~1.12x	~12% higher
Young-onset dementia	1.0x	1.24x	24% higher
Young-onset Alzheimer disease	1.0x	1.12x	12.4% higher
Young-onset vascular dementia	1.0x	1.21x	20.9% higher
Young-onset dementia	1.0x	~1.70x	~70% higher
Parkinson disease	1.0x	1.30x	30% higher
Sarcopenia (muscle loss)	1.0x	~2.01x	~101% higher
Incident fatty liver	1.0x	3.51x	251% higher

Cancer Risk Associated With Metabolic Syndrome

Cancer type	Without metabolic syndrome	With metabolic syndrome	Approximate increase
Hepatocellular carcinoma	1.0x	2.13–5.06x	113–406% higher
Pancreatic cancer	1.0x	1.58–2.13x	58–113% higher
Endometrial cancer	1.0x	1.37–2.20x	37–120% higher
Colorectal cancer	1.0x	1.14–2.61x	14–161% higher
Postmenopausal breast cancer	1.0x	1.13–1.60x	13–60% higher
Gastric cardia cancer	1.0x	1.18–2.50x	18–150% higher

Source for cancer-risk ranges: [Esposito et al., Diabetes Care 2012](#)

Introducing the Real-Life Patient X. This week, see how he presented at *The Clinic of Ageless Solutions*.

Patient X: Metabolic Dysfunction		
Category	Patient History / Findings	Why It Matters Metabolically
Patient profile	62-year-old male; 5'9", 210 lb; recently lost 30 lb and is approaching his goal weight	Significant weight loss is encouraging, but weight alone does not establish metabolic health
Primary concerns	Hypertension, high cholesterol, muscle loss, low libido, erectile dysfunction, leg cramps, and persistent dry mouth	Several concerns may accompany insulin resistance, vascular dysfunction, hormonal changes, medication effects, or loss of lean mass
Cardiovascular risk	Hypertension requiring amlodipine ; hyperlipidemia treated with rosuvastatin	Two major components of cardio-metabolic risk
Family history	Strong family history of stroke involving his father, grandmother, and aunts	Raises concern for underlying inherited cardiovascular and metabolic risk
Weight & nutrition	No structured nutrition plan; frequent fast-food lunches; historically high intake of processed foods; overeating, fast eating, poor snack choices; several Dr. Peppers/week	Dietary pattern may promote insulin resistance, dys-lipidemia, visceral fat accumulation, and poor appetite regulation
Muscle & exercise	Concerned about loss of muscle mass; walks and uses "home weights" approximately 4x/week	Preserving skeletal muscle is particularly important for glucose disposal, insulin sensitivity, and healthy aging
Sleep	Typically 4-7 hours/night with significantly disrupted sleep; history of sleep apnea	Inadequate sleep and sleep apnea can worsen insulin resistance, appetite regulation, blood pressure, and cardiovascular risk
Stress	Moderate-to-high stress (4-7/10) related to family health concerns	Chronic stress can adversely affect sleep, glucose regulation, appetite, and cardio-metabolic health
Hormonal/sexual health	Low libido and erectile dysfunction; uses Viagra	May warrant evaluation of testosterone and other hormonal and vascular contributors
Current medications	Amlodipine, rosuvastatin, Wellbutrin, doxepin, lorazepam PRN, tramadol, muscle relaxant, Viagra, and omeprazole	Medication burden and potential medication-related symptoms should be considered alongside underlying disease
Positive habits	Recent 30-lb weight loss; reduced processed foods; exercises regularly; drinks ~80-100 oz water/day; practices walking in nature and meditation	Provides a strong foundation on which to build further metabolic improvements
Initial recommendations	Eliminate soda; reduce/eliminate ultra-processed foods; slow eating and use deep breathing before meals	First steps aimed at improving food quality, appetite awareness, and metabolic health
Initial testing	Comprehensive Laboratory Assessment: CBC, iron studies, inflammatory markers, food sensitivity testing, comprehensive metabolic panel, lipid and triglyceride analysis, sex hormones, thyroid function, Omega-3 Index, and micronutrient testing, gut permeability analysis	Designed to look beyond conventional risk markers and better characterize his metabolic status

Patient X — Initial Medication List			
Medication / Supplement	Indication	Potential Side Effects	Potential Interactions / Considerations
Bupropion HCl	Depression / mood	Dry mouth, insomnia, anxiety/agitation, headache, increased blood pressure	Tramadol + bupropion may increase seizure risk; both can lower seizure threshold.
Amlodipine	Hypertension	Peripheral edema, dizziness, flushing, fatigue, palpitations	Sildenafil may produce additive blood-pressure lowering and dizziness/hypotension.
This Rosuvastatin	Hyperlipidemia / cardiovascular risk reduction	Muscle aches, weakness or cramps; elevated CK; rarely liver enzyme elevation	Relevant to his muscle-loss and leg-cramp complaints; symptoms warrant clinical evaluation rather than automatic attribution to statin therapy.
Doxepin	Sleep	Dry mouth, sedation, dizziness, constipation, blurred vision, appetite/weight effects	Additive sedation with lorazepam, tramadol and cyclobenzaprine. Tramadol may increase serotonergic and seizure-related risk.
Lorazepam	Anxiety	Sedation, impaired coordination, cognitive slowing, dependence/tolerance	Tramadol, cyclobenzaprine and doxepin can compound CNS depression and sedation; especially relevant with sleep apnea.
Tramadol HCl	Back pain	Sedation, dizziness, constipation, nausea, dry mouth; dependence; seizure risk	Bupropion increases seizure concern. Doxepin may increase serotonergic/seizure risk. Lorazepam, cyclobenzaprine and doxepin add CNS/respiratory depression.

Patient X — Initial Medication List			
Medication / Supplement	Indication	Potential Side Effects	Potential Interactions / Considerations
Cyclobenzaprine	Back pain / muscle spasm	Dry mouth, sedation, dizziness, fatigue, anticholinergic effects	Additive sedation with tramadol, lorazepam and doxepin. Serotonergic properties make combination with tramadol worth reviewing.
Sildenafil (Viagra)	Erectile dysfunction	Headache, flushing, nasal congestion, dizziness, dyspepsia	Amlodipine may enhance blood-pressure lowering. Erectile dysfunction can also be associated with vascular/metabolic dysfunction.
Nugenix Total-T	Testosterone support / supplement	Depends on exact formulation; possible GI or ingredient-specific effects	Exact ingredient list should be reviewed because formulations can vary; relevant when interpreting testosterone/hormonal laboratory results.
AREDS 2 + multivitamin	Eye health / nutritional supplementation	Usually well tolerated; possible GI upset	Review combined vitamin/mineral amounts to avoid unnecessary duplication.
Omeprazole	GERD / acid reflux	Headache, GI symptoms; prolonged use may contribute to B12 or magnesium deficiency in susceptible patients	Nutrient status may be relevant with chronic therapy, particularly in the setting of muscle symptoms/cramps.

In next week's edition, you will see the results of Patient X's initial laboratory studies and the *Ageless* Game Plan for reversing metabolic



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SPECIAL PROMO!

FREE Metabolic Test:

**Get your fasting insulin and HbA1c levels
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Expires 8/31/26.

[Call to Book!](#)

STAY TUNED!

Be on the lookout for next week's newsletter:

**METABOLIC HEALTH: THE FOUNDATION OF HEALTH AND LONGEVITY
PART 2 (of 3) — Measuring Metabolic Health: The Tests that Matter**

[Newsletter Archives](#)



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