THE PREVELITY LIBRARY

VOL. 03 · METABOLIC HEALTH

Insulin Resistance, **Caught Early.**

The metabolic problem that builds for a decade before blood sugar notices — how to measure it, the lifestyle levers that reverse it, and the medications your doctor may discuss.

FREE PREVIEW EDITION

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PRE-VELITY

INNOVATIVE PREVENTION, PERSONALIZED FOR LONGEVITY.

FOREWORD

Your blood sugar is usually the last to know.

Most people learn about their metabolic health the day a doctor says "prediabetes." By then, the underlying problem has usually been building for years — quietly, measurably, and reversibly.

That problem is insulin resistance. It sits upstream of type 2 diabetes, but also of fatty liver disease, high blood pressure, much of the heart risk people attribute to "cholesterol," and a surprising share of the fatigue, weight gain, and hormonal changes of midlife. It is extremely common. It is rarely measured directly. And it responds remarkably well to the right changes — especially when it's caught early.

This guide explains what insulin resistance is, how to find it before your blood sugar does, and the full range of options: the lifestyle levers that do most of the work, and the medications — including the GLP-1 drugs everyone is asking about — that your own physician may discuss with you. We've tried to be equally clear about benefits, trade-offs, and uncertainty.

WHAT THIS IS — AND ISN'T

Education, not a treatment plan.

This guide can't account for your history or medications. PreVelity is strictly preventive: we screen, monitor, and refer. Decisions about medication are made with your own physician. If you have symptoms of very high blood sugar — intense thirst, frequent urination, unexplained weight loss, blurred vision — see your doctor promptly.

DR. PATRICK MULLEN, MD
FOUNDING PHYSICIAN · PREVELITY

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SECTION 01

01.

The Quiet Decade.

Insulin resistance can build for years while every standard test comes back normal. That's not a flaw in you — it's how the body compensates.

INSIDE THIS SECTION

What insulin does · Why blood sugar stays normal · Who's at risk · Why it matters beyond diabetes

THE BASICS

Insulin is a key. Resistance is a sticky lock.

After you eat, glucose enters your bloodstream and your pancreas releases insulin. Insulin works like a key, signaling muscle, liver, and fat cells to take glucose in — to burn now or store for later. In a healthy metabolism, a modest amount of insulin does the job and blood sugar settles quickly.

In insulin resistance, the locks get sticky. Cells respond less to the same signal, so the pancreas compensates by producing more insulin. For a long time, that works: blood sugar stays normal, because the body is shouting louder to get the same result. That compensation is why standard tests miss it.

FIGURE 01 · THE FOUR STAGES

BLOOD SUGAR RISES LAST. INSULIN RISES FIRST.

Healthy	Normal insulin, normal glucose. Cells respond well.	INSULIN · GLUCOSE NORMAL
The quiet decade	Insulin climbing to compensate; glucose and A1c still normal. Rarely measured — and the easiest stage to reverse.	INSULIN ↑ · GLUCOSE NORMAL
Prediabetes	The pancreas can no longer fully compensate. Fasting glucose and A1c edge up.	INSULIN ↑↑ · GLUCOSE ↑
Type 2 diabetes	Glucose stays high. Risk to the heart, kidneys, eyes, nerves, and brain rises.	GLUCOSE ↑↑

The goal of prevention is to find people in the second rung — while the problem is still largely silent, and still largely reversible.

1 in 3

U.S. ADULTS

More than a third of American adults have prediabetes, and the large majority don't know it. Many more have insulin resistance with blood sugar still in the normal range — a group standard testing doesn't count at all.

U.S. Centers for Disease Control and Prevention estimates.

WHO'S AT RISK

Not just people who look "at risk."

VISCERAL FAT

The fat you can't see

Fat around the organs drives insulin resistance far more than fat under the skin. A normal weight doesn't rule it out — "thin outside, heavy inside" is common.

MUSCLE

Too little of it

Muscle is where most glucose goes after a meal. Less muscle — from inactivity or aging — means less room to store it.

SLEEP & STRESS

Short nights, high cortisol

Even a few nights of poor sleep measurably reduce insulin sensitivity. Chronic stress pushes the same way.

INHERITANCE & HISTORY

Genes, ancestry, events

Family history of diabetes; South Asian, Hispanic, Black, or Indigenous ancestry; gestational diabetes; PCOS; some medications such as steroids.

WHY IT MATTERS

Diabetes is only one of the destinations.

High insulin and insulin resistance affect nearly every system. They shift your lipid profile toward more triglycerides and smaller, more harmful LDL particles; raise blood pressure; drive fat into the liver; and are linked to higher risk of heart disease, several cancers, cognitive decline, and hormonal problems — low testosterone in men, polycystic ovary syndrome in women. That's why we treat metabolic health as a foundation of prevention, not a subspecialty.

> By the time blood sugar is high, insulin has usually been working overtime for years. Measure the effort, not just the result.
>
> THE UPSTREAM PRINCIPLE

SECTION 02

02.

Measuring It.

A single glucose number is a snapshot of a system that's been compensating for years. The right combination of tests shows the effort behind it.

INSIDE THIS SECTION

The standard tests · Fasting insulin and HOMA-IR · The triglyceride clue · Glucose monitors · Visceral fat and the liver

THE STANDARD TESTS

Glucose and A1c: the result, not the effort.

Most checkups measure fasting glucose and sometimes hemoglobin A1c — a roughly three-month average of blood sugar. They define prediabetes and diabetes, and they matter. But because the body compensates with extra insulin, both can stay normal for years while insulin resistance builds.

TEST	NORMAL	PREDIABETES	DIABETES
Fasting glucose	Below 100 mg/dL	100–125 mg/dL	126 mg/dL or higher
Hemoglobin A1c	Below 5.7%	5.7–6.4%	6.5% or higher

Diagnostic thresholds per American Diabetes Association criteria; a diagnosis requires confirmation by your physician. A1c can read falsely high or low with anemia, recent blood loss, kidney disease, and some hemoglobin variants.

MEASURING THE EFFORT

The tests that see the quiet decade.

01

Fasting insulin

HOW HARD THE PANCREAS IS WORKING

A high fasting insulin with normal glucose is the signature of compensation. There's no single universal cutoff; your physician reads it in context with the rest of your results.

02

HOMA-IR

GLUCOSE × INSULIN, AS ONE INDEX

Combines fasting glucose and insulin into an estimate of insulin resistance. Useful for tracking change over time in the same person and lab.

03

Triglyceride-to-HDL ratio

THE CLUE ON YOUR LIPID PANEL

High fasting triglycerides with low HDL often point to insulin resistance — a free signal hiding on a test most people already get.

04 **Oral glucose tolerance test**

A METABOLIC STRESS TEST

Measures how glucose (and, in some protocols, insulin) responds to a standard sugar drink over two hours. It can catch problems fasting tests miss.

GLUCOSE MONITORS

A continuous glucose monitor is a teacher, not a verdict.

Wearable glucose monitors are now available without a prescription. For people without diabetes, they're best used as a learning tool: two weeks of seeing how your meals, walks, sleep, and stress affect your glucose can change habits faster than any advice. Read patterns, not single spikes — a brief rise after a meal is normal. They are not a diagnostic test on their own, and they can feed anxiety in some people.

BEYOND THE BLOOD

Where the fat is matters more than how much.

WAIST

A tape measure

Waist circumference tracks visceral fat better than weight or BMI, and costs nothing.

BODY COMPOSITION

Visceral fat & muscle

A body-composition scan measures visceral fat and lean mass directly — both central to insulin resistance.

LIVER

Fat and scarring

Liver enzymes, simple scarring-risk scores, and sometimes imaging show whether insulin resistance has reached the liver.

IN YOUR PRE-SCORE

Measured together, read together.

The Pre-Score baseline looks at metabolic health from several angles at once — glucose, A1c, fasting insulin and resistance indices, lipids, inflammation, body composition including visceral fat and muscle, and fitness — so the picture isn't built from a single number. Your physician sets the exact panel.

END OF THE FREE PREVIEW

The rest of this guide.

You know what insulin resistance is and how to find it. The complete edition covers what reverses it: the lifestyle levers that do most of the work, an honest guide to the medications your doctor may discuss — including GLP-1 drugs, how to protect muscle on them, and what happens when you stop — plus fatty liver, the heart, hormones, and a four-step plan.

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