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The Next Level Lifespan

Educational Workbook

Clinical Biomarker Interpretation Guide
& Patient-Clinician Co-Pilot Protocol

01
Blood Diagnostics
Biochemical baseline

02
Urinalysis
Renal & microvascular

03
Wearable Telemetry
Daily physiology

Educational use only. Not medical advice. Review all results with your GP or licensed clinician.

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The Next Level Lifespan Educational Workbook

Clinical Biomarker Interpretation Guide & Patient-Clinician Co-Pilot Protocol | Revised Edition

CLINICIAN CO-PILOT MANDATE: Biomarker profiles, wearable data and laboratory scores are not medical diagnoses. Every result in this workbook should be reviewed with your licensed General Practitioner (GP) or qualified physician. Never start, change the dose of, or stop a prescribed medicine without clinician review.

01 / The Paradigmatic Longevity Shift

EXECUTIVE SUMMARY

Genes set your starting point, but daily habits decide much of how that starting point plays out. Twin studies suggest genetics explains only about 20 to 30% of the variation in human lifespan, which leaves a large, modifiable share to sleep, movement, nutrition, stress and environment. Those inputs steer gene expression, DNA methylation patterns and mitochondrial health. In large population studies, people who combine several healthy habits (not smoking, regular activity, a healthy weight, a good diet and moderate alcohol) live roughly a decade longer free of major chronic disease.

Longevity medicine applies that idea to your own data: measure early, act while changes are still reversible, and review progress with your clinician. The framework below describes three stages of care.

Stage 1: Reactive Care

Conventional care often waits for organ damage, vascular blockage or advanced disease before treating. Effective in emergencies, but late for prevention.

Stage 2: Hardware Defence

Proactive tracking of blood sugar, heart-rate variability, visceral fat and kidney filtration to catch and reverse drift early.

Stage 3: Software and Meaning

We protect the body so that purpose, family, curiosity and creativity can keep running at full strength for as long as possible.

The three diagnostic channels

Each channel answers a different question and runs at a different tempo. Together they give a fuller picture than any single test.

01 Blood diagnostics

Biochemical baseline

- Lipids, glucose, HbA1c, insulin
- Inflammation, liver and kidney function
- Hormones, vitamin D, iron stores

02 Urinalysis

Kidney and microvascular screen

- Weekly home dipstick (optional)
- Urine albumin-to-creatinine ratio (uACR)
- Hydration, pH, ketones, infection flags

03 Body composition and wearables

Daily physiology

- Smart-scale BIA: muscle, fat, visceral fat
- Resting heart rate and HRV
- Sleep efficiency and deep sleep

Figure 1.1 The three diagnostic channels: blood biochemistry, kidney and microvascular screening, and digital telemetry.

How to read the ranges in this workbook. Every table shows two columns. **Clinical standard** is the range a laboratory or GP treats as normal. **Optimal longevity target** is a stricter, preventive aim used in longevity and cardiology practice. Optimal targets are aspirational: being outside them is not a diagnosis, and chasing them without advice can do more harm than good. Reference ranges also vary between laboratories, so the range printed on your own report always takes priority.

02 / Channel 1: Blood Diagnostics

BIOCHEMICAL BASELINE

Blood chemistry maps cardiovascular risk, glucose control and organ function. You can start with the essential panel a GP can arrange (Choice A) or extend to a broader longevity panel (Choice B). Choice B includes everything in Choice A.

Before you test. Fast for 8 to 12 hours (water is fine), avoid hard exercise and alcohol for 24 hours, and tell the lab about any supplements. Biotin (vitamin B7) can distort thyroid and hormone results, so pause it for several days beforehand if your clinician agrees. Test when you are well: infection or injury can temporarily raise inflammation markers.

Choice A: Essential baseline diagnostic panel

Biomarker	Clinical standard	Optimal longevity target	What it tells you
Total cholesterol	< 5.0 mmol/L	**3.8 – 4.8 mmol/L**	The overall lipid pool. On its own it says little: read it alongside non-HDL cholesterol and ApoB.
HDL-C	> 1.0 (men) / > 1.2 (women) mmol/L	**1.3 – 1.8 mmol/L**	Reflects reverse cholesterol transport. Higher is not always better: very high values (above about 2.3) have been linked to worse outcomes in some studies, and raising HDL with drugs has not reduced risk.
LDL-C	< 3.0 mmol/L	**< 1.8 – 2.2 mmol/L**	Main driver of plaque formation. Your personal target depends on your overall cardiovascular risk and is set with your GP.
Triglycerides (TG)	< 1.7 mmol/L	**< 1.0 mmol/L**	Sensitive to recent food, alcohol and liver fat. A lower TG/HDL ratio generally points to better insulin sensitivity. Needs a fasting sample.
Fasting glucose	3.9 – 5.5 mmol/L	**4.0 – 5.0 mmol/L**	Morning blood sugar. 6.1 – 6.9 is the pre-diabetes range; 7.0 or above on repeat testing is diagnostic of diabetes. A rising trend within the normal range can signal early insulin resistance.
HbA1c	< 42 mmol/mol (6.0%)	**< 34 mmol/mol (about 5.3%)**	Average glucose over about 3 months (42 – 47 pre-diabetes, 48 or above diabetes). Anaemia, recent blood loss and some haemoglobin variants can make it unreliable.
ALT / AST (liver)	ALT < 45 IU/L, AST < 35 IU/L	**< 25 IU/L each**	Mild, persistent elevation often appears before fatty liver is visible on ultrasound. Alcohol, hard exercise and some medicines can raise it temporarily.
eGFR (creatinine)	> 60 mL/min/1.73 m²	**> 90 mL/min/1.73 m²**	Estimated kidney filtration. It drifts down with age and can read falsely low in very muscular people or after creatine use. Always pair with uACR (Section 03).

Choice B: LOLA Vital Check 56 comprehensive panel

Biomarker	Clinical standard	Optimal longevity target	What it tells you
Apolipoprotein B (ApoB)	< 0.90 g/L	**< 0.65 g/L**	Counts every atherogenic particle (LDL, VLDL, IDL), so it predicts vascular risk better than LDL-C alone. Lower aims (0.55 – 0.65) apply to higher-risk people.
hs-CRP (inflammation)	< 3.0 mg/L	**< 1.0 mg/L**	Low-grade inflammatory tone. Anything above 10 mg/L usually means recent infection or injury: repeat in 2 – 3 weeks before drawing conclusions.
TSH (with free T4 / free T3)	0.4 – 4.0 mIU/L	**1.0 – 2.5 mIU/L**	Sets metabolic rate and influences lipid levels. TSH outside the lab range, not the "optimal" band, is what needs medical attention. Interpret alongside free T4 and symptoms.
25-OH vitamin D	50 – 120 nmol/L	**75 – 125 nmol/L**	Supports bone, muscle and immune function. UK public-health advice is a 10 µg (400 IU) daily supplement in autumn and winter. Levels above 250 nmol/L risk toxicity.
Serum ferritin	About 30 – 300 µg/L (lab and sex specific)	**40 – 100 µg/L**	Iron storage marker. Low values mean deficiency; high values need a work-up (including transferrin saturation) because ferritin also rises with inflammation, alcohol and liver disease. Do not supplement iron unless tested.
Fasting serum insulin	< 25 mIU/L	**< 6 mIU/L (assay dependent)**	Can rise years before glucose or HbA1c move, but there is no universal reference range. Most useful as a personal trend, sometimes combined with glucose as HOMA-IR.
Free testosterone	Age and sex specific	**Within your lab range, with good symptoms**	Supports muscle, bone, mood and drive. Sample in the morning, repeat a low result, and review with a clinician. Never self-treat; supplementation can suppress natural production.
Serum oestradiol	Cycle phase / menopause specific	**Physiological balance for your stage**	Supports vascular, bone and brain health. Timing matters (for example early follicular phase), and contraception or HRT alters results. Best interpreted by your GP or specialist.

Where to start if you are testing on a budget

Heart and vessels

LDL-C (or ApoB if available), triglycerides and HDL-C, plus hs-CRP.

Glucose and liver

HbA1c, fasting glucose, and ALT/AST to catch early insulin resistance and fatty liver.

Kidneys

eGFR with a uACR. Together they give a far better kidney picture than either one alone.

Trends beat single numbers. One result is a snapshot, and normal day-to-day variation can be 5 to 15% for many markers. Repeat tests under the same conditions (time of day, fasting state, same lab where possible) and judge direction of travel, not a single reading.

03 / Channel 2: Urinalysis

RENAL DEFENCE

The kidneys receive 20 to 25% of cardiac output and contain some of the body's most delicate capillary beds. That makes them an early warning system for blood-vessel damage from high blood sugar, high blood pressure and chronic inflammation. Albumin is too large to cross a healthy filter, so leakage into urine (measured by uACR) can appear years before eGFR begins to fall.

A. Weekly 10-parameter point-of-care dipstick (optional)

Dipstick parameter	Clinical standard	Optimal longevity target	Interpretation
Urinary pH	4.5 – 8.0	**6.5 – 7.4**	Reflects diet and acid-base balance. Persistent pH below 5.5 favours uric-acid stones.
Specific gravity	1.002 – 1.030	**1.008 – 1.018**	Concentration ability. Above 1.025 usually means you need more fluid.
Ketones	Negative	**Negative to trace**	Trace or small amounts are expected after fasting or low-carb eating. Moderate or large amounts with illness need medical advice.
Protein	Negative	**Negative**	A persistent positive needs GP review. Note: dipsticks only detect larger leaks, so a negative result does not rule out early albumin loss (see uACR below).
Glucose	Negative	**Negative**	Appears once blood glucose passes the kidney threshold (about 10 mmol/L), so it is a late sign. Persistent positives need prompt GP review.
Nitrites / leukocytes	Negative	**Negative**	Suggest a urinary tract infection. Confirm with your GP; antibiotics should only be taken when prescribed.
Blood, bilirubin, urobilinogen	Negative	**Negative**	Any persistent positive warrants GP review. Menstruation can cause a false positive for blood.

Test tips: use a first-morning, mid-stream sample, read the strip at the time stated on the pack, and note that high-dose vitamin C can mask glucose and ketone results. Repeat any odd result and act on persistent findings.

B. Clinical lab urine albumin-to-creatinine ratio (uACR)

Category (KDIGO)	uACR	Classification	Action plan
A1: Optimal	< 1.0 mg/mmol (< 10 mg/g)	Optimal longevity	Intact filtration barrier and low microvascular risk.
A1: Normal	< 3.0 mg/mmol (< 30 mg/g)	Standard normal	Acceptable. Re-screen annually, or every 6 months if you have high blood pressure.
A2: Moderately increased	3.0 – 30 mg/mmol (30 – 300 mg/g)	Early microvascular injury (formerly microalbuminuria)	Confirm on repeat early-morning samples, then review with your GP. Blood pressure and glucose control are the priority; your GP will set your personal blood pressure target.
A3: Severely increased	> 30 mg/mmol (> 300 mg/g)	Significant capillary damage (formerly macroalbuminuria)	Needs prompt GP review and likely kidney-specialist input, medication review and strict cardiovascular protection.

Testing rhythm. Quarterly uACR is only needed if you have diabetes, high blood pressure, kidney disease or a raised result being monitored. For most healthy adults, a baseline test and then annual (or GP-advised) checks is enough. Avoid sampling during exercise, fever, infection or menstruation, which can raise uACR temporarily.

04 / Channel 3: Body Composition and Wearables

DAILY TRACKING

Lab tests are snapshots. Smart-scale bioimpedance (BIA) and wearable sensors fill in the days between, turning physiology into a trend line. Consumer devices are less accurate than clinical equipment, so use them to track **your own direction of change**, not to compare yourself with others.

A. Bioelectrical impedance (BIA) smart-scale targets

BIA parameter	Standard reference	Optimal longevity target	Clinical action and interpretation
Visceral fat rating	Level 1 – 12 is healthy; 13 or above is excess	**Lower end of the healthy range, trending down**	Fat around internal organs releases inflammatory signals (IL-6, TNF-α) and is a priority to reduce. Ratings differ between brands, so cross-check with waist size (aim below 94 cm for men, 80 cm for women).
Skeletal muscle %	Men 33 – 39% / women 25 – 30%	**Men > 42% / women > 32%**	Muscle is your largest glucose-disposal tissue and protects against sarcopenia. Resistance training twice weekly is the strongest lever.
Body fat %	Men 14 – 24% / women 21 – 31%	**Men 10 – 16% / women 18 – 24%**	Supports insulin sensitivity. Going too low can disrupt hormones, so lower is not always better. BIA can be off by several percentage points.
Extracellular water ratio (ECW/TBW)	< 0.390	**0.360 – 0.380**	Higher values suggest fluid retention or inflammation. Hydration, salt intake and hard training shift it day to day. Persistent readings above 0.400 with visible swelling should be reviewed by a GP.

B. Wearable biosensors (continuous physiological vitals)

Sensor metric	General population	Optimal longevity target	Autonomic and cardiovascular meaning
Resting heart rate (RHR)	60 – 100 bpm	**48 – 58 bpm if fit and well**	A lower rate often reflects efficient stroke volume and calm autonomic tone. Lower is not a goal in itself: see a GP for a persistent rate above 100 or below 40 bpm, especially with dizziness or fainting.
Nocturnal HRV (rMSSD)	Highly individual and age dependent	**Above your own baseline trend**	Higher variability suggests good vagal (parasympathetic) reserve. A multi-day dip below your baseline often follows illness, alcohol, poor sleep or stress.
Sleep efficiency	75 – 90%	**85% or above**	Time asleep divided by time in bed. Persistently below about 80% suggests fragmented or insufficient sleep.
Slow-wave (deep) sleep	Roughly 13 – 23% of sleep, about 1 – 1.5 h	**Stable or improving trend**	Supports growth-hormone release, immune recovery and brain waste clearance. Deep sleep naturally declines with age, and wrist devices estimate stages imprecisely.

Weigh-in consistency

Step on the scale at the same time each day: on waking, after urinating, before drinking or eating. Hydration alone can swing BIA readings.

Trend over absolute

Do not compare raw HRV with other people. Track your 7-day rolling average to spot stress, illness and fatigue early.

Sleep and the brain

Deep sleep helps clear metabolic waste from the brain via the glymphatic system. Much of this evidence is from animal studies, but it is a good reason to protect sleep.

05 / Day-1 Zero-Cost Habits

BEHAVIOURAL

You do not need expensive supplements or complicated protocols to start improving your physiology. These three free habits protect blood-vessel health and sharpen insulin sensitivity from day one.

After-meal glucose regulation: the skeletal-muscle sponge effect

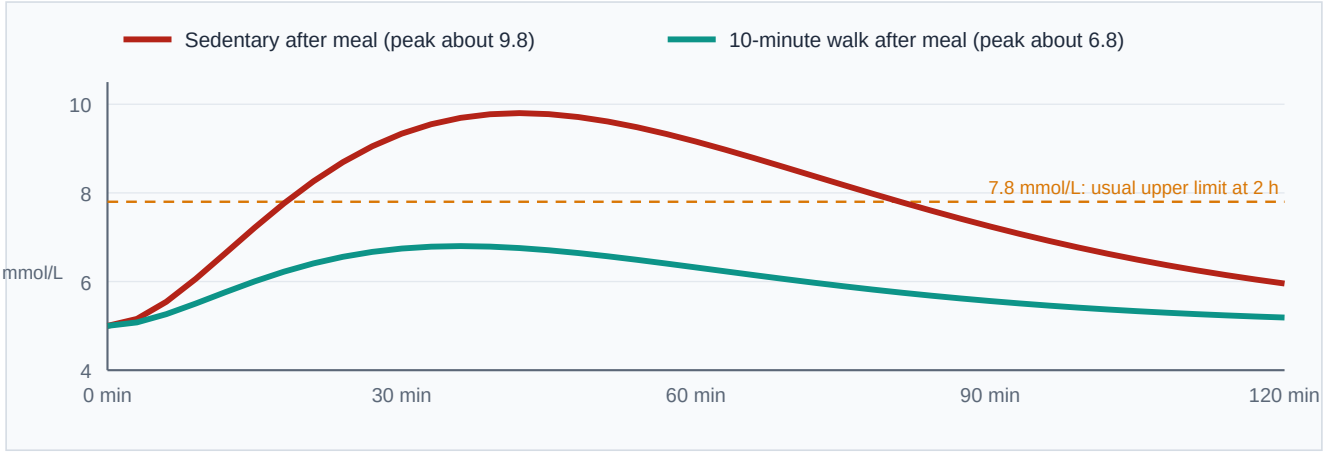

Figure 5.1 Illustrative curves only, not personal data. Individual responses vary with the meal, fitness and timing.

01 The 10-minute post-meal walk (GLUT4 translocation)

Walking gently for 10 minutes after your largest meal makes working muscles pull glucose out of the blood through insulin-independent GLUT4 pathways, so the pancreas has to release less insulin. Studies using continuous glucose monitors show it noticeably blunts the after-meal peak. Even 2 to 5 minutes helps, and starting within 30 minutes of eating works best.

02 Vagal reset and non-sleep deep rest (NSDR)

Chronic stress keeps the body in sympathetic "fight or flight" mode, with sustained cortisol and adrenaline. Spend 10 to 15 minutes at midday on physiological sighing (two quick nasal inhales, then one long, unhurried exhale through the mouth) or an NSDR audio session. Both are associated with a calmer heart rate and a shift toward parasympathetic tone.

03 Fibre-first eating and glycaemic buffering

You do not need a restrictive diet. Eat vegetables or a small salad, or take about 5 g of soluble fibre, 5 to 10 minutes before the starchy part of a meal. Fibre slows stomach emptying and glucose absorption, and eating protein and vegetables before carbohydrates reduces the after-meal spike.

Safety note. If you take insulin or glucose-lowering tablets, speak to your GP or diabetes team before changing your meal timing or activity pattern, because lower glucose peaks can raise the risk of hypoglycaemia. Anyone with chest pain, breathlessness or dizziness during activity should stop and seek advice.

Bonus micro-habits. Get 10 minutes of outdoor daylight soon after waking, keep a consistent wake-up time, and do two short resistance sessions per week. Together they support sleep quality, HRV and the muscle mass that drives glucose control.

06 / Clinician Co-Pilot Workflow and 3-Month Plan

CLINICAL IMPLEMENTATION

Data only matters when it informs good decisions. Follow this three-step co-pilot process ahead of your routine medical consultations so your tracking turns into safe, evidence-based care.

01

Read and learn

Work through the guides, identify your biological priorities and understand the three stages of lifespan progression.

02

Log vitals and labs

Enter blood, urine and wearable results online. Include Lola Vital Check 56 and epigenetic test data if you have them.

03

Export your GP brief

Download the 2-page GP Consultation Brief and take it to your General Practitioner for safe, co-evaluated care.

Figure 6.1 The 3-step protocol: from workbook study to secure digital telemetry and your concise GP consultation brief.

The 3-month diagnostic progression matrix

Phase	Primary action items	Biometric milestones	Clinical consultation focus
Month 1: Baselines	Order Choice A or B blood panel and a baseline uACR. Set up the smart scale and record blood pressure and waist size.	ApoB (or LDL-C), HbA1c, fasting glucose or insulin, eGFR and uACR logged in your patient file.	Review baselines with your GP and establish your personal cardiovascular risk tier.
Month 2: Telemetry	Do the weekly Sunday dipstick if you choose to. Log resting heart rate and nocturnal HRV daily.	Visceral fat rating stable or falling versus baseline. Morning urine pH mostly 6.5 – 7.4.	Review 30 days of home data and look for autonomic strain or microvascular flags.
Month 3: Optimisation	Add post-meal walks and NSDR resets, and tune meals for steadier glucose.	Post-meal glucose peaks mostly below 7.8 mmol/L (if using a CGM). Deep sleep trending up toward 1 – 1.5 h.	Re-test hs-CRP, ALT and the TG/HDL ratio. HbA1c and lipids need about 3 months to reflect change.

TAKE ACTION TODAY: Open your digital dashboard at **123TheNextLevel.com/clinician-copilot** to enter your laboratory and wearable results. Export your concise 2-page summary (*clinical-baseline-consultation-template-v2.pdf*) to turn your next 10-minute GP visit into a focused, collaborative longevity review.

Three rules for data you can trust

Test under the same conditions

Same time of day, same fasting state, same scale position, same lab where possible.

Change one thing at a time

If you alter diet, exercise and sleep together, you cannot tell which one moved your numbers.

Log the context

Note illness, travel, alcohol, poor sleep and new supplements next to each reading so outliers make sense.

07 / Your GP Visit Toolkit

PREPARE, TRACK, ACT SAFELY

A short, organised brief makes a 10-minute appointment far more productive. Use this page to prepare, and to know when not to wait.

Seek medical advice promptly, without waiting for the 3-month plan, if you notice:

- Chest pain, sudden breathlessness, fainting, or sudden weakness or speech changes: call 999.
- Persistent protein, blood or glucose on urine dipsticks, or signs of infection that do not settle.
- Fasting glucose of 7.0 mmol/L or above, or excessive thirst, frequent urination or unexplained weight loss.
- Home blood pressure of 180/120 or above, a resting heart rate persistently above 100 or below 40 bpm, or new swelling in the legs or face.

Questions to bring to your GP

- Given my results, what is my overall cardiovascular and diabetes risk, and what should my personal LDL-C or ApoB target be?
- Which of my markers should we repeat, when, and under what conditions (fasting, time of day)?
- Do my kidney results (eGFR and uACR) need confirming, and how often should I be rechecked?
- Do any of my medicines, supplements or hormones affect these results?
- Which lifestyle change would make the biggest difference for me in the next 3 months?

My personal baseline tracker

Marker	Baseline (date)	Month 3 (date)	My GP's target for me
LDL-C or ApoB			
Triglycerides / HDL-C			
Fasting glucose			
HbA1c			
hs-CRP			
ALT / AST			
eGFR			
uACR			
Blood pressure			
Visceral fat rating / waist			
Resting HR / average HRV			
Sleep efficiency / deep sleep			

About this workbook. This is educational material, not medical advice. Reference ranges follow common UK and European laboratory conventions and preventive-cardiology practice (for example NICE, ESC/EAS and KDIGO frameworks) and may differ from your laboratory's. Optimal longevity targets are general aims, not individual prescriptions. Always follow the guidance of your own clinician.