GENESIS
FUNCTIONAL WELLNESS

A GENESIS FUNCTIONAL WELLNESS PATIENT GUIDE

Understanding Your Thyroid Labs

A patient guide to TSH, T4, T3 & thyroid medication

Genesis Functional Wellness
Elverson, Pennsylvania & telehealth across PA
genesisfw.com

EDUCATIONAL GUIDE
NOT MEDICAL ADVICE

SECTION ONE

Why thyroid labs can be confusing

If you have ever read a thyroid lab report and felt no closer to understanding your own health, you are in good company. Thyroid results are not difficult because you are missing something obvious. They are difficult because a single number rarely means only one thing.

A thyroid panel is a set of measurements taken at one moment, under one particular set of circumstances. Several of those circumstances change what the numbers look like — which is why the same result can mean different things for two people, or for you at two different times.

What shapes a thyroid result

- Whether you take thyroid medication
- Which type it is — T4 only, T3, or a product containing both
- The dose, and how consistently it has been taken
- When you last took it before the blood draw
- When the blood was actually drawn
- Your physiology — absorption, binding proteins, pregnancy, oral estrogen
- Your symptoms and how you are functioning
- What the other thyroid measurements show alongside it

A WORD ABOUT TSH

TSH is genuinely useful, and it is the right place to start. It is also worth understanding what it is. TSH is a *pituitary* hormone, not a thyroid hormone — the signal the pituitary sends to the thyroid, turned up when it senses too little thyroid hormone and turned down when it senses enough. That makes it an excellent indirect measure, and a reliable one for the job it was designed to do.

What TSH cannot tell you on its own is how much thyroid hormone is actually circulating, in what form, or how you are responding to your medication. The answer is not to disregard TSH — it is to read it alongside the rest of the picture.

HOW TO USE THIS GUIDE

Read pages 3–7

How the system works, what each marker means, how medication type changes the pattern, and why timing matters.

Fill in pages 8–10

The pre-draw worksheet and My Thyroid Snapshot. Complete them each time labs are drawn, so you build a record of your own pattern.

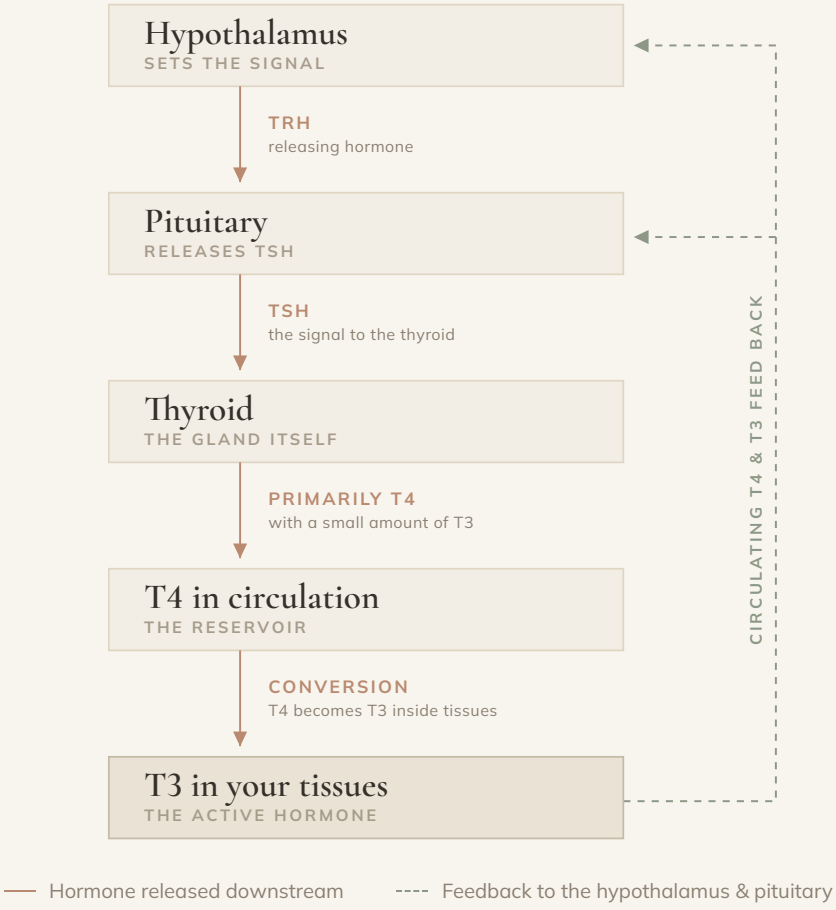
Bring pages 9–11

Questions worth asking at your next appointment — written for a conversation, not a confrontation.

SECTION TWO

The thyroid feedback loop

Thyroid labs make more sense once you can picture the system they measure. It is a loop, not a line — and the loop explains why TSH and your hormone levels do not always move together.



Reading the loop

The hypothalamus and pituitary sit at the top of the system, watching how much thyroid hormone is in circulation and adjusting their signal accordingly. The thyroid itself releases mostly T4.

Here is the detail that reframes much of this guide: **most of the T3 your body uses was never released by your thyroid.** Roughly 80% of it comes from T4 being converted into T3 inside tissues. T4 is the reservoir; T3 is what the reservoir is for.

Why the loop matters when you read labs

The pituitary responds readily to T3 — though not instantly. This is why a medication containing T3 can move TSH: the signal changed because the pituitary sensed more hormone. That is not automatically a problem, and not automatically fine either. Page 7 explains how to read it.

It is also why TSH and your hormone levels do not always travel together, and why one number on its own can point somewhere the rest of the picture does not.

SECTION THREE

Your thyroid lab quick reference

What each marker is, what it helps a clinician understand, and the context that changes how it should be read. Not every person needs every test — which markers are followed is a clinical decision.

MARKER	WHAT IT IS	WHAT IT HELPS US UNDERSTAND	IMPORTANT CONTEXT
TSH Thyroid-stimulating hormone	A *pituitary* hormone — the signal the pituitary sends to the thyroid. Not a thyroid hormone itself.	How the pituitary is reading your thyroid hormone supply. It is the most widely used marker for screening and for monitoring replacement, and it is reliable at that job.	It responds to circulating hormone with a delay, and it responds readily to T3. Medication type, dose and the timing of the last dose all influence it. Most informative when read alongside T4 and T3 rather than on its own.
Free T4 Unbound thyroxine	The fraction of T4 not attached to carrier proteins — the portion available to your tissues.	How much of the main circulating thyroid hormone is actually available. On T4 medication it reflects the dose fairly directly.	Unlike Total T4, it is not distorted when binding proteins shift, which is why it is often the more useful of the two.
Free T3 Unbound triiodothyronine	The unbound fraction of T3, the more biologically active thyroid hormone.	How much active hormone is circulating. Particularly useful when someone is not responding the way you would expect.	Timing-sensitive. On a T3-containing medication it peaks roughly one to two hours after a dose and drifts down through the day. A higher Free T3 is not the goal of treatment.
Total T4 Bound + unbound thyroxine	All the T4 in your blood, both the portion bound to carrier proteins and the portion that is free.	The overall size of the circulating T4 pool, and — read with T3 uptake — how binding proteins are behaving.	Rises with oral estrogen, oral contraceptives and pregnancy without thyroid status having changed. Always interpreted with binding in mind.
Total T3 Bound + unbound triiodothyronine	All the T3 in your blood, bound and unbound together.	Adds to the T3 picture, particularly where binding proteins are in question or free testing is unclear.	Like Total T4, it is raised by oral estrogen and pregnancy. A high Total T3 in someone taking an oral contraceptive is usually a binding-protein finding rather than hyperthyroidism.

WHY THIS GUIDE DOES NOT LIST "OPTIMAL" NUMBERS

Reference ranges differ between laboratories, and the same result can mean different things depending on your medication, when you took it, whether you are pregnant, what else you take, and how you feel. A single universal target would make this guide simpler and less accurate. Interpreting your own numbers is a conversation to have with your clinician — and this page is meant to make that conversation easier.

Antibodies, binding & the rest of the panel

These markers answer different questions from the hormone levels: whether an autoimmune process is present, and whether carrier proteins are shifting what the totals look like.

MARKER	WHAT IT IS	WHAT IT HELPS US UNDERSTAND	IMPORTANT CONTEXT
Reverse T3 rT3	An inactive form produced when T4 is converted down an alternative pathway instead of into T3.	Sometimes used as context for how the body is handling T4 during illness, inflammation, significant calorie restriction or physiologic stress.	Its clinical role is debated and it is not a treatment target. Read as one piece of context alongside everything else — never as a diagnosis on its own.
TPO antibodies Thyroid peroxidase antibodies	Antibodies directed at an enzyme the thyroid uses to make hormone. The most common marker of autoimmune thyroid disease.	Whether an autoimmune process — Hashimoto's — is part of the picture, which changes what is worth monitoring over time.	Antibodies describe the autoimmune picture, not the dose. They do not need to reach zero, and medication is not adjusted from an antibody level. Positive antibodies with normal thyroid function are not by themselves a reason to start thyroid hormone.
Thyroglobulin antibodies TgAb	Antibodies directed at thyroglobulin, the protein the thyroid uses as a scaffold for hormone production.	Adds to the autoimmune picture — sometimes positive when TPO antibodies are not.	Can also interfere with certain thyroglobulin measurements, which matters in specific clinical situations. Interpreted together with TPO antibodies and the overall picture.
TBG Thyroid-binding globulin	The main carrier protein thyroid hormone travels on in the blood. Only unbound hormone reaches tissues.	Whether binding proteins are distorting the total hormone measurements — a common source of confusing results.	Raised by oral estrogen, oral contraceptives and pregnancy. The liver's first pass is what drives this, so transdermal estrogen is not expected to behave the same way.
T3 uptake & FTI Free thyroxine index	An older pair of measurements. T3 uptake estimates how much room is left on binding proteins; the Free Thyroxine Index combines that with Total T4.	A way of estimating free hormone indirectly when binding proteins may be shifted.	Largely superseded by direct free-hormone testing, but still informative within a complete panel — particularly when binding is part of the question.

THE POINT OF A FULLER PANEL

A broader panel is not testing for the sake of testing. Each of these answers a question the others cannot: how much hormone is being produced, how much is available, how it is being converted, how it is being carried, whether autoimmunity is active, and how you are responding to treatment. Genesis Precision Thyroid Care includes a complete thyroid panel alongside relevant nutrient testing, and thyroid imaging when indicated.

SECTION FOUR

Thyroid medication, side by side

Different medications supply different hormones — and that changes what a normal set of labs looks like. This is a description of four tools, not a ranking.

CATEGORY	WHAT IT PROVIDES	EXAMPLES	WHAT THIS CAN MEAN FOR YOUR LABS
T4-only medication The usual first choice	T4 alone. Your tissues convert it into T3 where and when they need it.	Levothyroxine (generic), Synthroid, Levoxyl, Unithroid, Tirosint (capsule), Tirosint-SOL (oral solution).	T4 has a half-life of about a week, so levels stay steady through the day and TSH and Free T4 track the dose fairly predictably. Free T3 comes from conversion rather than being supplied directly.
T3-only medication Rarely used alone	T3 directly — the active hormone, without a T4 reservoir behind it.	**Liothyronine (Cytomel).** These are the same medication: liothyronine is the drug, Cytomel is a brand name for it.	Short-acting, so levels rise and fall through the day and a Free T3 depends heavily on when the last dose was taken. TSH becomes a less straightforward guide with no T4 in the regimen. Reserved for unusual situations.
Combination therapy T4 + T3, dosed separately	Both hormones, each prescribed and adjusted on its own.	A T4 medication taken alongside liothyronine (Cytomel).	Steady T4 with a T3 level that peaks after each T3 dose. The practical advantage is that the two can be adjusted independently. TSH often runs lower than it would on the same amount of T4 alone.
Desiccated thyroid DTE · glandular · NDT	T4 and T3 together in a single product, derived from porcine thyroid tissue.	Armour Thyroid, NP Thyroid.	The ratio is fixed at roughly four parts T4 to one part T3 — proportionally more T3 than the human thyroid secretes, which is on the order of eleven to fourteen parts T4 per part. T3 rises noticeably in the hours after a dose, and TSH often runs low on a dose that feels subjectively good.

NO CATEGORY IS UNIVERSALLY BETTER

Many people do very well on T4 alone, and there is no reason to change a plan that is working. Some appear to do better with a little T3 included. Randomized trials have not shown combination or desiccated therapy superior on average — yet in those trials a substantial share of patients preferred a T3-containing option. Both are real findings, which is why the useful question is which strategy suits *you*.

ONE SITUATION WHERE THE CHOICE NARROWS

Pregnancy. Current guidance is that hypothyroidism in pregnancy be treated with levothyroxine, and that T3-containing and desiccated products not be used in pregnancy — with any change made before fertility treatment rather than after a positive test. The reason is mechanical: the fetal brain relies on maternal T4 specifically, and TSH does not warn you if T4 runs low. If pregnancy is on the horizon, raise it early.

Medication selection and any change to a prescription are decisions for you and the clinician who prescribes it. The full article — formulation, absorption, the evidence, and the current regulatory and coverage picture for desiccated products — is in the Learning Center at genesisfw.com/learn.

SECTION FIVE

Why can TSH run low on T3-containing medication?

If you take liothyronine (Cytomel), a combination of T4 and T3, or a desiccated product such as Armour Thyroid or NP Thyroid, you may have seen a TSH lower than expected while feeling reasonably well. Here is what is happening.

01

T3 reaches the pituitary quickly

T3 is the active hormone. After an immediate-release dose it peaks in the blood within a couple of hours — far faster than T4 moves.

02

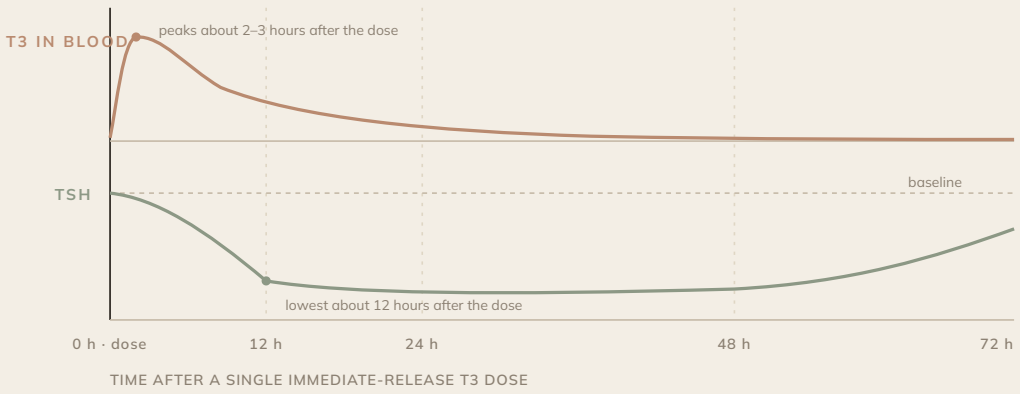
The pituitary turns its signal down

Sensing plenty of hormone, the pituitary releases less TSH. The number falls because the signal changed, not necessarily because anything is wrong.

03

TSH stays down far longer

After a single dose of liothyronine, T3 peaked at about 2.5 hours — but TSH did not bottom out until roughly 12 hours, and stayed below baseline for two to three days.



A TSH drawn while you take T3 reflects an accumulated, delayed signal from the preceding days — not the amount of T3 in that particular tube.

Schematic, from a study of healthy volunteers given a single dose of liothyronine. Illustrative rather than to scale; individual responses vary.

WHAT A LOW TSH IS

A finding that deserves interpretation — read alongside the medication and dose, how long before the draw it was taken, Free T4 and Free T3, your symptoms, heart rate and cardiovascular history, bone health, and how you are doing overall.

WHAT A LOW TSH IS NOT

Automatically harmless. Real over-replacement carries consequences for heart rhythm, cardiovascular health and bone. In long-term data that risk concentrates where TSH is fully suppressed rather than simply somewhat below range — and under-replacement carries risk of its own. The goal is appropriate replacement: enough, not maximum.

SECTION SIX

Lab timing matters

Two results drawn from the same person in the same week can look different simply because of when the blood was taken relative to the medication. Knowing the timing is what makes a result interpretable.

If you take T4-only medication

T4 has a half-life of about a week, so levels stay relatively steady through the day and the exact hour of the draw matters less. What still matters is whether your daily routine has been consistent in the weeks beforehand — same product, same time, same separation from food and supplements.

If your medication contains T3

Timing matters a great deal. Free T3 peaks roughly one to two hours after a dose and drifts down over the day. The same person can look high two hours after a dose and low just before the next one. Neither result is wrong — they are snapshots of different moments.

Absorption changes the number too

Levothyroxine is absorbed in the small intestine, and several everyday things reduce how much gets in: coffee, calcium and iron supplements, acid-suppressing medication including proton pump inhibitors, high-fiber foods and soy. Consistency in the weeks before a draw is what makes the result mean something.

Six weeks is the usual interval

After any change in dose, brand or manufacturer, thyroid levels take roughly six weeks to settle at a new steady state. Labs drawn sooner do not yet mean what they appear to mean — and symptoms often lag behind the labs.

IMPORTANT

This guide does not tell you whether to take your medication before a blood draw. That is a decision for you and your clinician — and what matters most is that whoever reads the result knows what you did. **Do not change how, when, or whether you take thyroid medication on your own.**

WORKSHEET · BEFORE MY BLOOD DRAW

MEDICATION

DOSE

TIME MEDICATION TAKEN

TIME BLOOD WAS DRAWN

DID I TAKE MY THYROID MEDICATION BEFORE THE BLOOD DRAW? ☐ Yes ☐ No

ANYTHING DIFFERENT IN THE WEEKS BEFORE THIS DRAW? (NEW MEDICATION OR SUPPLEMENT, ILLNESS, PREGNANCY, STARTING OR STOPPING ORAL ESTROGEN, A PHARMACY OR MANUFACTURER CHANGE)

My Thyroid Snapshot

Fill this in each time labs are drawn. Kept over time, it turns a list of numbers into a record of your own pattern — which is far more useful than any single result.

DATE OF LABS	MEDICATION	DOSE

TIME MEDICATION TAKEN	TIME LABS DRAWN	LABORATORY USED

MY RESULTS

TSH	
Free T4	
Free T3	
Total T4	
Total T3	
Reverse T3	
TPO antibodies	
Thyroglobulin antibodies	

OTHER TESTING WORTH RECORDING

For example T3 uptake, Free Thyroxine Index, thyroid-binding globulin, ferritin and iron studies, vitamin B12, folate, vitamin D, or thyroid ultrasound findings.

Reference ranges differ between laboratories — record the range printed on your own report alongside each result if there is room.

How I feel right now

Labs describe one half of the picture. Recorded on the same day as your results, this page is what lets you and your clinician see whether the numbers and the person are moving in the same direction.

TICK ANYTHING YOU ARE EXPERIENCING

Date _____

- ☐ Fatigue
- ☐ Hair changes or hair loss
- ☐ Weight changes
- ☐ Heat intolerance
- ☐ Changes in bowel habits
- ☐ Cold intolerance
- ☐ Brain fog
- ☐ Anxiety
- ☐ Tremor
- ☐ Menstrual or cycle changes (where applicable)
- ☐ Constipation
- ☐ Difficulty concentrating
- ☐ Palpitations
- ☐ Sleep changes
- ☐ Other

OTHER — DESCRIBE

WHICH OF THESE BOTHERS ME MOST

WHAT HAS CHANGED SINCE MY LAST LABS?

Worth noting: a dose change, a new brand or manufacturer, a new medication or supplement, illness, pregnancy or pregnancy plans, starting or stopping oral estrogen, a change in weight, sleep or stress — and whether symptoms are better, worse, or the same.

QUESTIONS I WANT TO ASK AT MY NEXT APPOINTMENT

Bring this page and page 9 to your appointment, along with the worksheet on page 8. Two or three of these filled in over a year are worth more than any single set of results.

SECTION SEVEN

Questions to ask about your thyroid care

These are questions for a conversation, not a challenge. Most clinicians welcome a patient who arrives organized — and a good answer to any of them will tell you something useful.

01 **Which thyroid markers are we following, and why those?**

Knowing which tests are being tracked — and which are not — makes every future result easier to put in context.

02 **How does my medication affect the way my labs should be interpreted?**

A T4-only regimen, a T3-containing regimen and a desiccated product each produce a different expected pattern. The medication is part of reading the result.

03 **Does the timing of my medication relative to my blood draw matter for me?**

It matters more on some regimens than others. Ask what you should do, and make sure the timing is recorded either way.

04 **Are my symptoms consistent with my laboratory findings?**

When they are not, that is worth naming out loud — it usually means there is more to work out rather than less.

05 **Are my thyroid antibodies being monitored when it is clinically appropriate?**

Antibodies describe the autoimmune picture rather than the dose, and they are not needed at every visit — but knowing where you stand is useful.

06 **Could anything else be affecting my thyroid hormone, my absorption, or my symptoms?**

Iron and ferritin, B12 and folate, sleep, calorie intake, insulin resistance, perimenopause, gut health and other medications can all shape how you feel.

07 **When should my labs be repeated — and what would make us repeat them sooner?**

Roughly six weeks after a change is the conventional interval. Knowing the plan prevents both premature testing and long unexplained gaps.

08 **If we change something, how long before we will know whether it helped?**

Labs and symptoms move on different timelines. Agreeing in advance on how long to give a change makes it far easier to judge it fairly.

Not every question applies at every visit. Two or three of the right ones usually get you further than all eight — and page 10 has space to write down the ones that matter most to you.

SECTION EIGHT

When thyroid care deserves a closer look

Most people with hypothyroidism do well on a straightforward plan, and there is no reason to complicate care that is working. There are situations, though, where a fuller evaluation tends to be worth the effort.

- Symptoms that persist despite treatment that looks adequate on paper
- Hashimoto's or other autoimmune thyroid disease
- Laboratory results that keep shifting without a clear explanation
- Questions about medication — formulation, timing, absorption, or whether the current strategy is right
- Pregnancy, preconception planning, or fertility treatment
- A meaningful change in how you feel, in either direction
- A history of nodules or abnormal thyroid imaging
- Thyroid disease alongside complex hormonal, metabolic or digestive issues

None of these means something is wrong. Each is simply a point at which a wider view tends to answer more questions than another isolated result will.

> KEEP THIS GUIDE WITH YOUR LAB REPORTS
>
> Pages 8 to 10 are built to be printed again each time labs are drawn. Two or three completed copies over a year show what no single result can: the direction you are moving in, and whether your numbers and your symptoms agree.

GENESIS PRECISION THYROID CARE

Thyroid care that looks at the whole picture

Genesis Precision Thyroid Care provides comprehensive thyroid evaluation, medication coordination and ongoing monitoring — a complete thyroid panel rather than a single marker, relevant nutrient testing, thyroid ultrasound when it is indicated, and a careful read of how you are responding to the treatment you are on, continued as your physiology changes.

LEARN ABOUT PRECISION THYROID CARE

genesisfw.com/thyroid-care

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