

THE THYROID RESET



30 days to balance your thyroid,
increase your energy, improve your
mood, lose weight and keep it off.

**BY DR. JUSTIN
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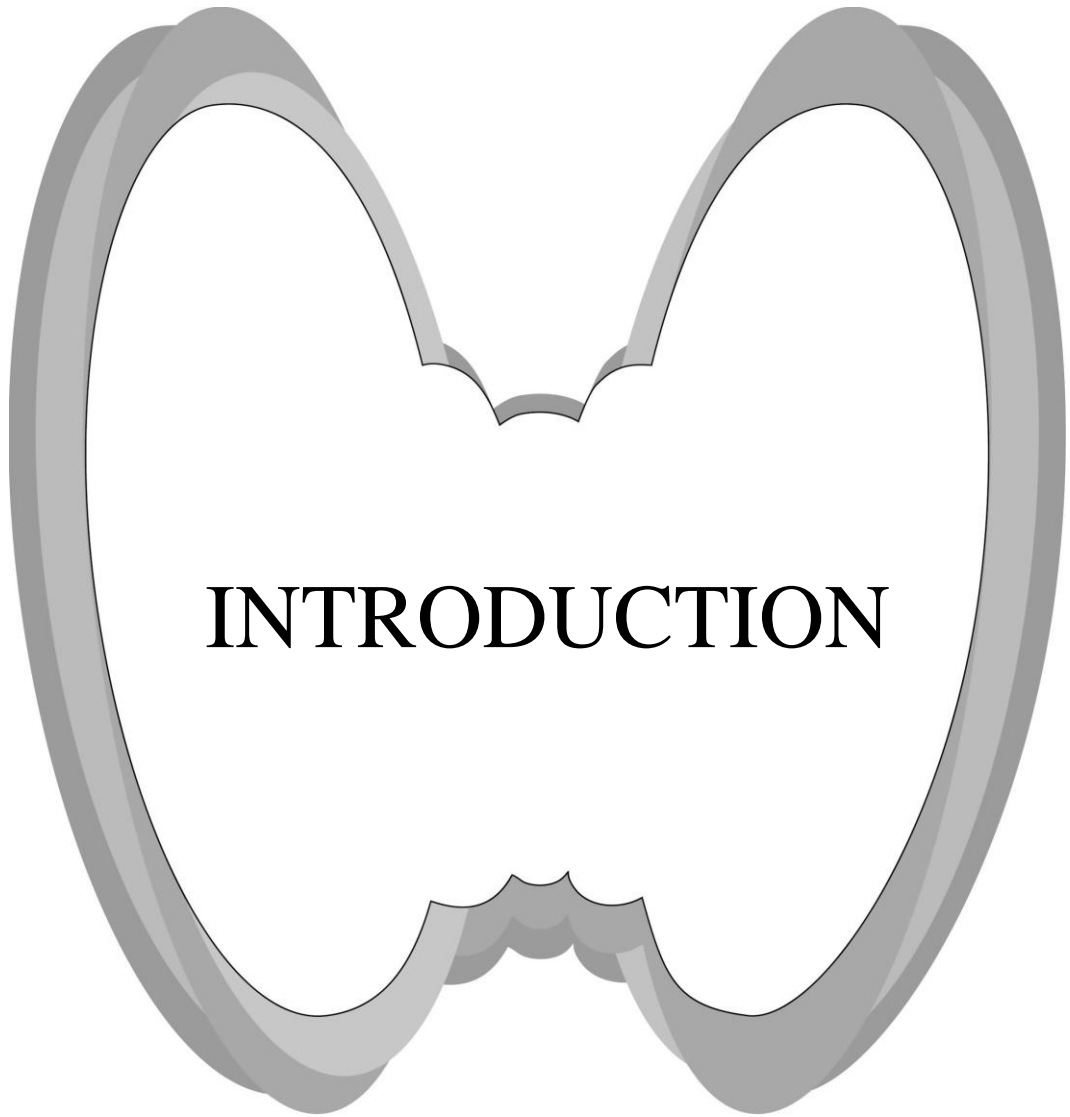
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What do you do when your check-engine light comes on in your car? Do you cover the light with duct tape and pretend it's not there? Or maybe reach under the dash and disconnect the wire? The best solution would be to take it to a mechanic. The mechanic can then find the source of the problem and fix it. Once the root cause is fixed, the warning light goes off.



Thyroid symptoms (e.g., fatigue, weight gain, hair loss dry skin) work much the same way. The symptoms are your check-engine light. They aren't the problem—they're the signal that something is wrong. Just as you wouldn't carry around a roll of duct tape and slap it over your check-engine light, pharmaceutical drugs for thyroid symptoms may only mask the symptoms. Yet some people with significant thyroid issue may need thyroid medication to stabilize their thyroid (these are patients with very elevated TSH). This then gives you time to work with your functional medicine practitioner to ensure the root cause of your thyroid imbalances are being addressed. It's always good to have your Medical doctor rule out any serious thyroid issues like cancer or a thyroid storm (severe elevation in thyroid hormone like in Graves' disease) which tend to be rarer anyways. This gives you the confidence while working on the root causes that nothing is being missed.

FUNCTIONAL MEDICINE DETERMINES THE REAL CAUSE OF HEALTH PROBLEMS

I became a functional medicine doctor because it is one branch of health that actually explores the root cause of why people get sick and why their body isn't functioning optimally. I learned early on that disease prevention isn't glamorous. On the other hand, it's really cool and exciting to be a surgeon on the cutting edge, fighting and researching the disease after it has already done its damage. It's heroic!

But it was my own struggle with Hashimoto's thyroiditis that led me to want to dig deep into how the body systems connect to each other. With this knowledge, I could help others *before* disease ravaged their bodies, *before* they ended up on life-long medications, *before* they had to have diseased organs or limbs cut from their bodies.

Yes, disease prevention isn't glamorous, but despite this, getting to the root cause of what's driving the disease so we can prevent suffering is my goal and the goal of functional medicine.

As a university student, I worked in the surgical field. My job was to assist surgeons during limb amputations and organ removals. The surgeon would come in and tie off all the leg arteries, for example, and remove the leg. I would hold the amputated leg, wrap it up, and take it to the morgue. The leg would still be warm as I did my job. Hundreds of limbs and organs that passed through my hands on the way to the morgue disturbed me—surely this could have been prevented.

THIS HAD TO STOP—IT WAS RUINING LIVES!

I began to question myself: *How can we prevent this? How can we get to the root cause of what's driving this?* I asked the surgeons but got nowhere. It really wasn't their field. It really wasn't within their scope of knowledge or even on their minds. Most of them enjoyed the same vices (e.g., eating refined sugar, smoking, general lack of physical health, etc.) equally as much as the patients they treated. I realized there was a disconnect in conventional medicine—in regard to nutrition, diet, lifestyle, and getting to the root cause of their patients dis-ease. Their focus was on finding the disease and cutting it out and not on preventing it.

WHAT IS HASHIMOTO'S DISEASE?

Years later as I started dealing with my health and working through my own health challenges, it became known to me that I had an autoimmune condition called Hashimoto's thyroiditis. This is an autoimmune disease that effects the thyroid gland.

When you have an *autoimmune condition*, it simply means that your immune system is attacking your own body. In *Hashimoto's thyroiditis*, the immune system attacks the thyroid, and up to 90 percent of all thyroid issues are autoimmune in nature.¹ I had suffered from the symptoms of severe adrenal stress for many years before I discovered this underlying smoldering fire called Hashimoto's was residing in the background.

I was able to diagnose my Hashimoto's while in doctorate school after finding antibodies in some of my lab work. *Antibodies* are produced by the immune system to fight off harmful substances in the body, but in this case, those antibodies mistakenly saw *my thyroid* as harmful and were fighting it as if it were a dangerous foreign substance! I was still consuming dairy, had nutritional deficiencies, and had underlying infections that were driving my autoimmunity. This diagnosis motivated me to learn more about autoimmunity and the thyroid initially because I wanted to improve my health. I wanted to fix myself by getting to the root cause.

I then began to study about the underlying connections that drive Hashimoto's. I learned about gluten and its connection to autoimmunity and autoimmune diseases. I learned about infection and how it can drive autoimmunity. I learned about stress and sleep. I learned about everything that could contributed to my condition.

I FIGURED OUT HOW EXACTLY THE THYROID WORKED

¹ www.ncbi.nlm.nih.gov/pubmed/3066320

After learning all I could about Hashimoto's, I turned my focus to the thyroid in general. I learned about the conversion of thyroid hormones (T4 to T3). I learned how to monitor thyroid function. I learned how the gut and gut permeability were connected to the thyroid, how the adrenals were connected, how food allergens like gluten were connected, how the liver and the body's detoxification system were connected, and how infections were connected. It was like an spider web, when one side of the web moved, the other side moved too, just like the thyroid.

I also studied how the thyroid is impacted by toxins in our environment, blood sugar, diet, and lifestyle, and I figured out what supplements were needed to help accelerate and nudge the thyroid and body in the direction of healing.

The more I learned about the thyroid, the more obvious it was that many systems had to work together for optimal health to occur. Thyroid function isn't just a one-man job; it's an orchestra, and if one instrument does its own thing or plays off-key, that beautiful music will turn into noise pretty fast.

As I dove into the field of functional medicine, I discovered that over twenty million Americans suffered with symptoms relating to thyroid imbalances. These symptoms include: Brain fog, sleep problems, depression, mood disturbances, constipation, cold hands, cold feet, thinning of the eyebrows, hair loss, lack of energy, and so on.

Dysfunction in the body systems (hormones, gut, detox & mitochondria) can *affect your* thyroid directly and indirectly causing symptoms to manifest. These body systems fall out of balance due to excess stress (physical, chemical, or emotional stress) in our life, where our body loses the ability to adapt to them. So essentially stress is the first domino to fall, the body system imbalances are second followed by the outwards symptoms last. I call this the S, S, S approach to healing, when followed properly it's a true road map to health. To help others attain an optimal level of health, functional medicine was the ideal path that encompassed the holistic philosophy I used to help heal my thyroid.

THE DIFFERENCE BETWEEN FUNCTIONAL MEDICINE AND CONVENTIONAL MEDICINE

Conventional medicine is primarily focused on treating these symptoms with medication. If you have a stomach issue, it's probably a proton-pump inhibitor. If you have a mood issue, it's Prozac or some other SSRI (antidepressant) medication. If you're fatigued, maybe some thyroid hormone or a stimulant.

Functional medicine, on the other hand, offers a filter or a lens to look at patients and evaluate their symptoms. What is the root cause? What is the underlying issue? We don't want to just treat and manage it—we want to eliminate and prevent it!

Imagine conventional and functional medicine as two separate tool belts. In conventional medicine, your doctor has only a hammer (the medication) in his or her tool belt. So every thyroid issue the doctor sees, he or she pulls out that hammer: here's your prescription for Synthroid (or Levoxyl or Levothroid or some other thyroid symptom medication).

But here's the problem with this one-tool approach: What if it's the immune system, or gut permeability or a toxin that's driving the thyroid issue? How does hammering it with Synthroid get to the root issue? It may play a role in stabilizing and relieving a symptom or two, but it doesn't fix the problem. Hammers can be powerful tools but there are often times a better tool for the job.

In functional medicine, doctors and practitioners have many custom tools in their tool belt. These can include supplements, natural or bioidentical thyroid hormone, and specific lab testing to figure out a person's thyroid pattern.

There are also the following interventions:

- Diet modifications (Paleo, low fodmap, AIP, SCD etc.)
- Blood sugar support
- Inflammation reduction
- Balance and support hormones (Thyroid, male, female and adrenal)
- Improve digestion and absorption
- Gut healing and gut permeability (leaky gut)
- Remove infections.
- Support detoxification (Heavy metals, pesticides, mold etc.)
- Enhance neurotransmitters and mitochondria

In functional medicine, the doctor will utilize any or every tool necessary to find and address the root cause (leaky gut, adrenal dysfunction, infections, etc.) contributing to the thyroid issue.

HOW DOES FUNCTIONAL MEDICINE TREAT THE THYROID?

What makes functional medicine's approach to the thyroid so different, and why I'm so passionate about it, is it has an approach that is very specific and unique to getting to the root cause of each individual's thyroid issue. For one person, it may just be a simple, "Hey, we just need to work on your diet and your adrenals and cut out gluten."

For someone else, it may be, "You have some serious micronutrient deficiencies and some chronic infections we need to address." For yet another, it may be a combination of the two or three. My goal for each of my patients is to get to the root cause of the thyroid issue and customize a healing and preventive plan for that person.

If we continue to look at where the root cause is coming from and we eliminate the stressors and treat the body systems that aren't functioning properly, thyroid symptoms

will eventually take care of themselves. We just have to make sure we do it holistically, and I will lay out the path to accomplish this in *The Thyroid Reset*.

WHAT YOU WILL LEARN IN THIS BOOK

In the first half of the book we will explore thyroid fundamentals:

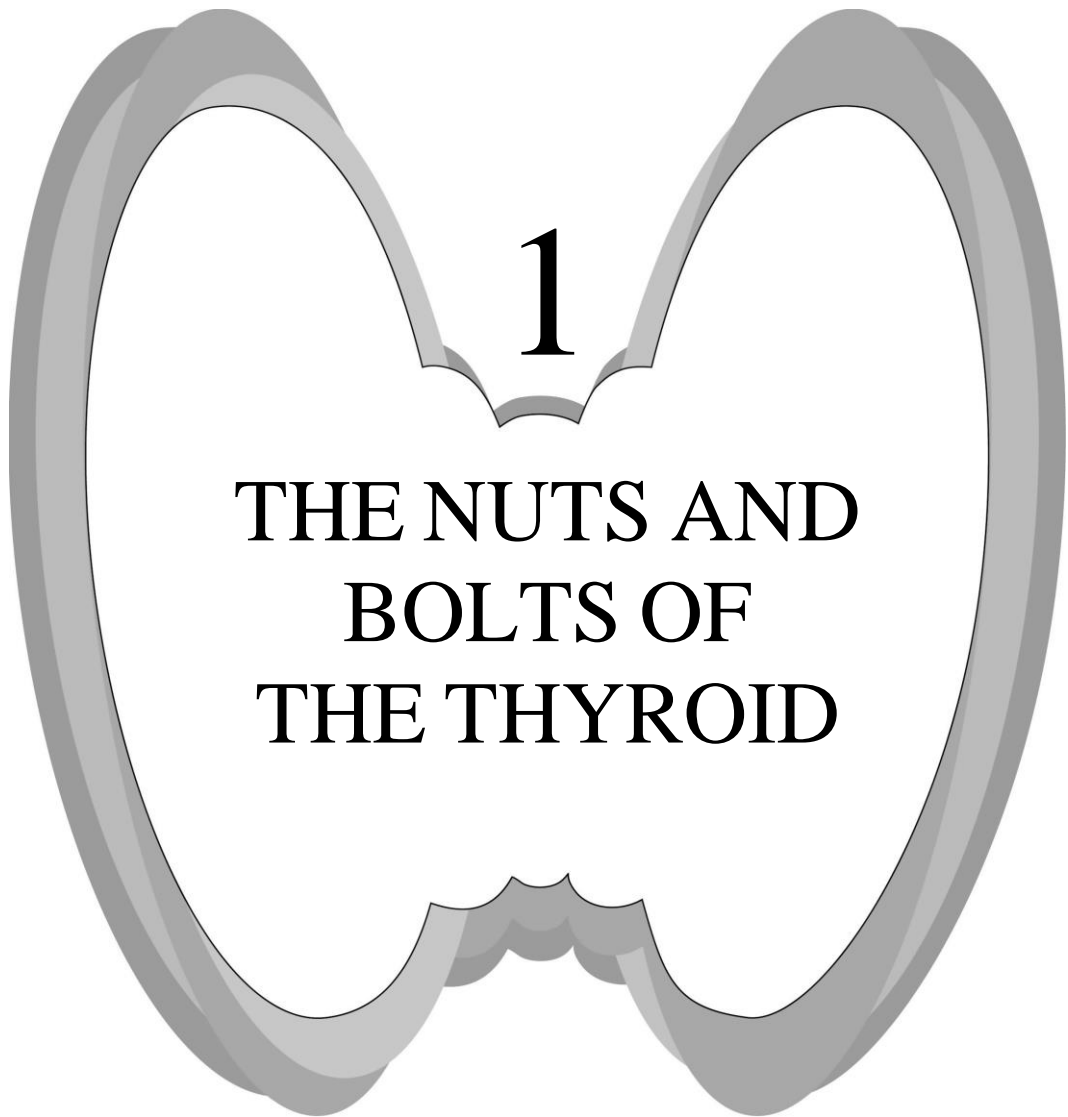
- What is the thyroid?
- What does it do?
- What diet and lifestyle best supports the thyroid?

From there we will address thyroid connections: the gut, the adrenals, gluten, the liver and detoxification, and infection. Finally, we will iron out thyroid maintenance: vitamins, minerals, herbs, and supplements.

In the second half of the book we're going to incorporate specific eating and lifestyle approaches that will help with any type of thyroid issue. My hope is you will apply the action plan and utilize the recipes and meal plans included so you can fix your thyroid, increase your energy, improve your mood, and lose weight fast with *The Thyroid Reset*.

This book is for informational purposes only. I ask you not to self-diagnose or self-treat. Please see a medical doctor first and foremost to rule out any significant diseases, next see a functional medicine practitioner and use this book in conjunction with the diagnosis, treatment, and advice provided by your practitioner. If at any point you need help during your journey to health, Dr. Justin provides health consultation and support worldwide and you can reach him directly at www.justinhealth.com to schedule a consult.

There will also be an online course available that will act as a supplement to this book, "The Thyroid Reset Course" which will be available at www.justinhealth.com/thyroidcourse and www.fixyourthyroid.com. This is great for individuals and practitioners who want even more information and support.



WHAT IS THE THYROID?



The thyroid is a gland that sits just below your Adam's apple on the front of your neck. It is a butterfly-shaped gland that hugs your windpipe. You should be able to feel it easily just by running your fingers down the sides of your windpipe just below your Adams apple (Tilting your head back slightly may help).

The thyroid gland resides and functions within the body's endocrine system. It works together with other glands (adrenal, sex, pituitary, etc.) to keep the body balanced and functioning optimally.

WHAT DOES THE THYROID DO?

The main function of the thyroid gland is to serve as the center of metabolism in the body. *Metabolism* is the sum of all chemical reactions that occur within the body's cells; it converts the food you consume into energy. The thyroid gland produces hormones that help control and impact cellular metabolism.

You need thyroid hormone to metabolize other hormones as well, so thyroid hormone is essential for life. If you don't have thyroid hormone or you start having lower amounts of thyroid hormone, you will start developing lots of unwanted symptoms, such as sleep issues, fatigue, and weight gain.

Think of your thyroid gland as your body's thermostat. If you turn the thermostat down low, it won't produce enough heat (thyroid hormone) to give you energy and keep you feeling comfortable. You'll start developing a lot of thyroid symptoms, and your metabolism will suffer without the proper amount of hormone to control it.

HOW DOES THE THYROID WORK?

First, it's important to understand the hormone called *thyroid-stimulating hormone (TSH)*. Conventional doctors will typically perform a TSH screening test when looking for thyroid issues. This is important because the TSH is not a thyroid hormone like many people may think. It's actually a pituitary hormone. Since the pituitary is in the brain, TSH can also be considered a brain hormone. When testing for TSH, the doctors are looking at how the brain responds in order to diagnose a thyroid issue. Clearly, testing the TSH isn't a direct indicator for thyroid dysfunction, but it can help pick up late stage thyroid issues that may have been going on for years.

The thyroid gland produces a hormone called thyroxine, also called T4. Thyroxine is a *prohormone*, which means it is a “precursor of a hormone, usually having minimal hormonal effect by itself.”² T4 gets converted to triiodothyronine (T3). Although T4 makes up about 95% of thyroid hormone, T3 is 300% to 400% more biologically active than T4. T3 may be found in an active form in the body—called T3, or an inactive form—called reverse T3. T4 primarily feeds back to our TSH, and unfortunately, T4 is the main hormone that most conventional doctors and endocrinologists test.

WHERE T4-T3 CONVERSION HAPPENS

Twenty percent of T4-T3 conversion happens right at the thyroid. The other 80 percent of the conversion happens *peripherally*, which means it happens in other parts of the body. Of that 80 percent, 60 percent happens in the liver, 20 percent happens in the gut, and the additional 20 percent is converted based on stress levels.

Conversion in the Liver

With 60 percent of T4-T3 conversion happening in the liver, it’s easy to see why healthy liver function has such an important connection to healthy thyroid function. If the liver is not functioning optimally, if you have blood sugar or detoxification issues, then you’re going to have significant problems converting your thyroid hormone.

Conversion in the Gut

With 20 percent of T4-T3 conversion happening in the gut, you need healthy gut bacteria for this to happen optimally. If you have dysbiosis (an imbalance of good and bad bacteria in the gut) from eating too much sugar or excessive antibiotic use, these habits will negatively affect how your body converts thyroid hormone.

Conversion Based on Stress Levels

Additional percentages of T4 hormone will also be converted based upon your levels of stress. However, your stress level will cause T4 to convert to reverse T3 (inactive T3).

There are three kinds of stressors that impact this process: physical, chemical, and emotional (these three stressors make up the Triangle of Health, which we will discuss in a later chapter). Stressors cause the body to conserve its energy so it can focus on the stress. The more stress, the higher the percentage of T4 converted to reverse T3. The lower

² <https://en.wikipedia.org/wiki/Prohormone>

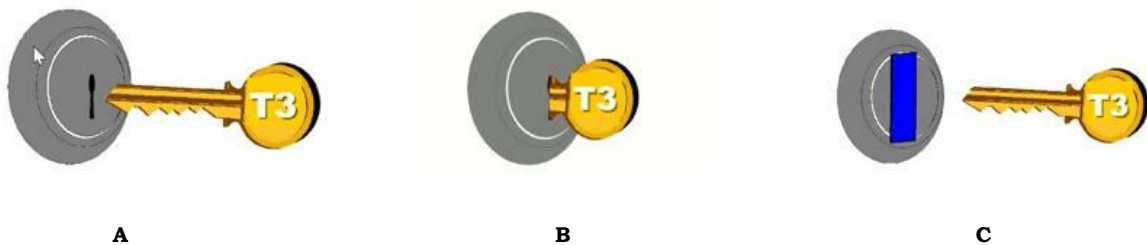
the stress, the higher the percentage of T4 converted to the healthy active T3.

Think of reverse T3 as blanks in your metaphorical “Metabolic gun”. When you put blanks in your “Metabolic gun” and fire it, nothing comes out, just some noise. The same thing happens with the thyroid when we put reverse T3 in the receptor site (proteins on the surface of cells that receive messages). The thyroid is not going to respond metabolically as if we had put free T3 in the receptor site.

HOW T4-T3 CONVERSION HAPPENS

Hormones have to bind into a cell’s receptor site for a metabolic effect (that generation of energy) to occur. This is true for any hormone: testosterone, progesterone, estrogen, thyroid, and so on.

THYROID HORMONE BINDING V/S BLOCKED



If the body is converting our T4 hormone to T3, that T3 can then bind into a receptor site on our cells, like a key in a lock (images A and B above) and produce a metabolic effect. On the surface this might present itself as healthy hair, skin, nails, and gut function, for example.

If the thyroid hormone is converting T4 to reverse T3 (the metabolic blanks), the body is telling you to slow down so it can prevent its metabolism from going too high. This is represented by the key being unable to access the lock (image C above). On the surface this might present itself as fatigue, dry skin, constipation, and so on.

THE THYROID’S ESSENTIAL INGREDIENTS

There are essential nutrients and elements that must be present to keep the thyroid healthy and functioning optimally. Iodine and selenium are the main ingredients, but just like with any good recipe, a little too much or not enough can ruin the whole dish, so let’s explore these important elements.

Iodine

Iodine is the main essential element for creating thyroid hormones. The government's recommended daily allowance (RDA) is 150 mcg of iodine per day³. When pregnant, your iodine needs go up to nearly 300mcg. Inadequate iodine during pregnancy can lower your baby's IQ development and is the number 1 cause of preventable retardation, known as cretinism. As much as we think of Iodine as being important for our thyroid, it's is very important for a health pregnancy. ⁴

In the United States, iodine deficiency is rare because we regularly consume foods rich in iodine, including salmon, eggs, cow's milk, strawberries, and yogurt. Common table salt (iodized salt) is also fortified with iodine. Worldwide, however, one of the main causes of low thyroid function, or hypothyroidism, is iodine deficiency. Iodine deficiency is common in locations where nutrition is poor or where iodine is deficient in the soil like in the goiter belt within the United States (The Rockies, great lakes basin and western New York). ⁵

The American Thyroid Association states, "Hashimoto's thyroiditis, which is the most common cause of hypothyroidism, is associated with an increased risk of thyroid nodules. Iodine deficiency, which is very uncommon in the United States, is also known to cause thyroid nodules."⁶ One study following 2,941 people in a population where iodine was added to the food supply found the incidence of nodules decreased.⁷

On the flip side of the coin, excessive iodine intake can be a problem as well. Numerous studies reported in the *Journal of Clinical Endocrinology and Metabolism* and others have shown high iodine intake can cause a *goiter* (a swelling of the thyroid gland)⁸. For example, one study showed that in Hokkaido, Japan, where goiters are common, "the major cause of the endemic coast goiter seems to be excessive and long-standing intake of iodine from seaweed... In a few patients, restriction of seaweed induced a marked decrease in the size of goiter."⁹

This shows there's a fine balance between not enough and too much iodine. This is why it's so important to work with your functional-medicine practitioner to assure you are achieving the proper balance. Self-diagnosing and supplementing with iodine could cause more damage than you are trying to prevent, and there are more factors to consider besides just iodine deficiency; selenium deficiency, which we will address in a moment,

³ ods.od.nih.gov/factsheets/Iodine-HealthProfessional/

⁴ www.thyroid.org/what-are-thyroid-nodules, <https://doi.org/10.1016/j.arteri.2014.07.003>

⁵ www.thyroid.org/what-are-thyroid-nodules, <https://yourmedicalsourc.com/content/goiter-belt>

⁶ www.thyroid.org/what-are-thyroid-nodules, <https://yourmedicalsourc.com/content/goiter-belt>

⁷ www.ncbi.nlm.nih.gov/pubmed/?term=22663551

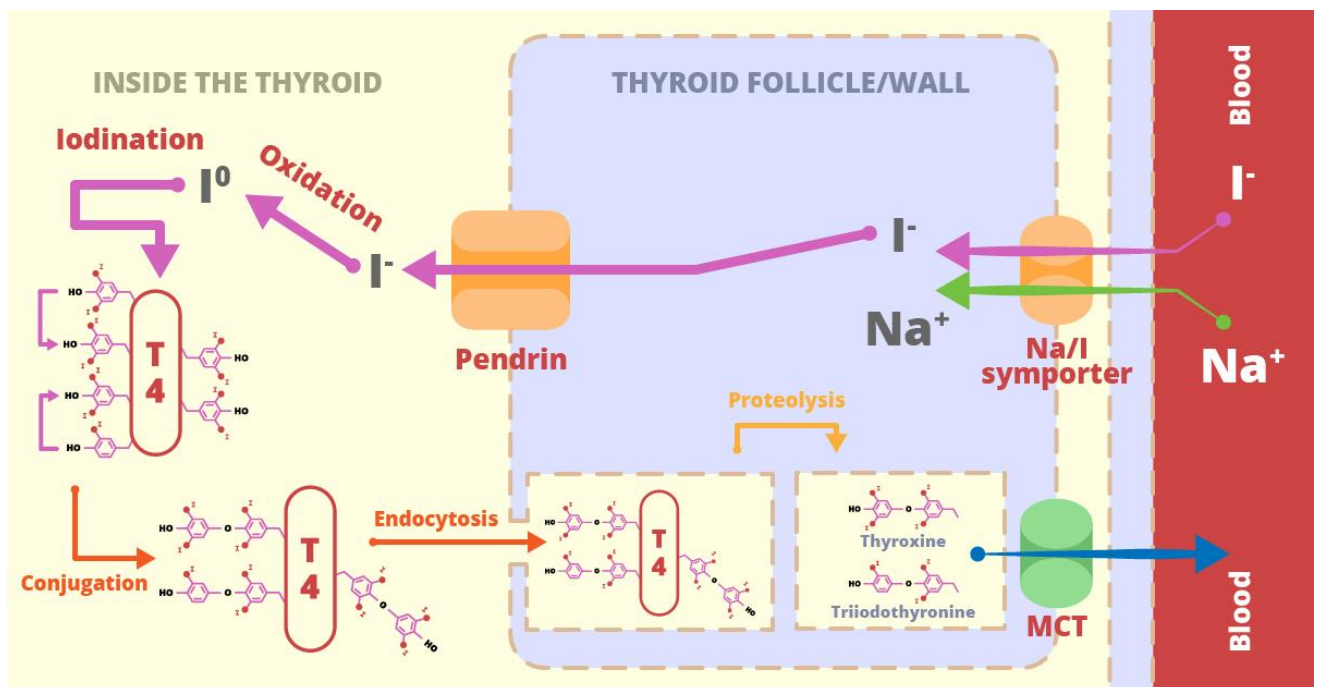
⁸ www.ncbi.nlm.nih.gov/pubmed/4307521, www.ncbi.nlm.nih.gov/pubmed/?term=18578621, www.ncbi.nlm.nih.gov/pubmed/?term=8106628, www.ncbi.nlm.nih.gov/pubmed/?term=12466344

⁹ www.ncbi.nlm.nih.gov/pubmed/?term=4158495, www.eje-online.org/content/50/2/161, <http://www.vivo.colostate.edu/hbooks/pathphys/endocrine/thyroid/chem.html>

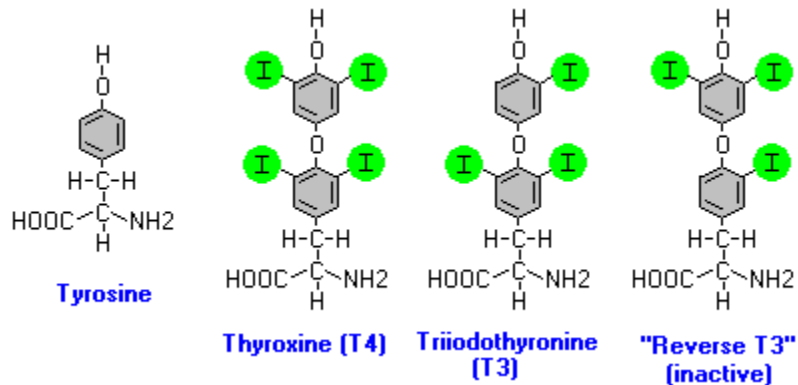
plays a key role here as well.

Iodide, Iodine, and Iodination

Iodide (I⁻) is essentially two molecules of iodine bound together. We commonly see this combined with potassium Iodide which is one of the more common iodine or iodide supplementation used today. Some supplements like Lugol's solution will have a combination of iodide and iodine Be very careful with Iodoral or Lugol's solution as the iodine dosage is much higher than most (2-5mg per drop with Lugol's). Make sure you are working with a trained practitioner when you are using higher doses of iodine. Supporting selenium is and reducing inflammation from food is always foundational before adding iodine at higher levels into the mix.



The conversion of iodide to iodine occurs through a process called *iodination* (see the image above). This process involves the sodium iodide symporter (the bridge from the blood stream to the thyroid). This is where the nutrients come from the blood come into the thyroid tissue to make thyroid hormone. Iodide is oxidized into iodine and then bound to the amino acid tyrosine to make the thyroid hormone T₄, where it is then converted to active thyroid hormone T₃. Thyroid hormone (T₄ or T₃) gets their name because of the number of iodine molecules that are attached to them. (see the image below). Four iodine molecules for T₄ and three iodine molecules for T₃.



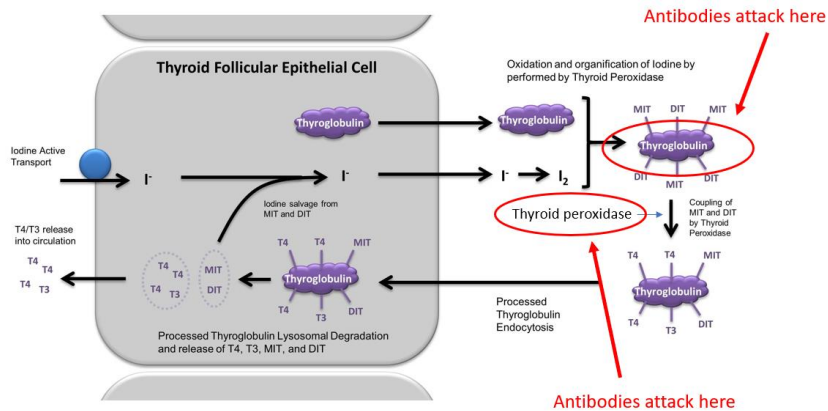
Amino acids, especially tyrosine is essential to make thyroid hormone as well. That's why low-protein (like some vegan and vegetarian diets) and low-calorie diets can affect thyroid hormone production. Tyrosine ends up becoming a major building block for thyroglobulin.

It's a downward-spiral effect: When iodine or iodide is lacking in the diet, iodination cannot occur effectively. When iodination is lacking, the amino acid tyrosine can't be bound to iodine to make thyroid hormone. This is how iodine deficiency can lead to hypothyroidism. Even if there is enough iodine, but protein consumption is low, thyroid hormone production could still be impaired. Iodine deficiency isn't common in the USA unless you malnourished from starvation or too much processed food and consume foods grown in iodine deficient soils like in the "Goiter Belt" area.

Thyroglobulin, Thyroid Peroxidase and Hashimoto's

We have a compound called *thyroglobulin* that is inside the thyroid follicles which is primarily made up of tyrosine amino acids. The thyroid follicles are little berry-shaped structures throughout the thyroid gland. The thyroglobulin (tyrosine) gets converted into thyroid hormone via the iodination process mentioned above. Thyroglobulin (tyrosine) bound to iodine to make thyroid hormone.

Hashimoto's is an autoimmune thyroid condition where you immune system attacks the thyroid gland resulting in lower thyroid function, or hypothyroidism over time. In Hashimoto's disease, it's the thyroglobulin inside the thyroid follicle that is attacked along with the enzyme that helps bind the thyroid hormone together. In practice I clinically see TPO ab (thyroid peroxidase antibodies) elevated 75% of the time while TG ab (Antithyroglobulin) elevated 25% of the time. Some people can go back and forth like I personally have.

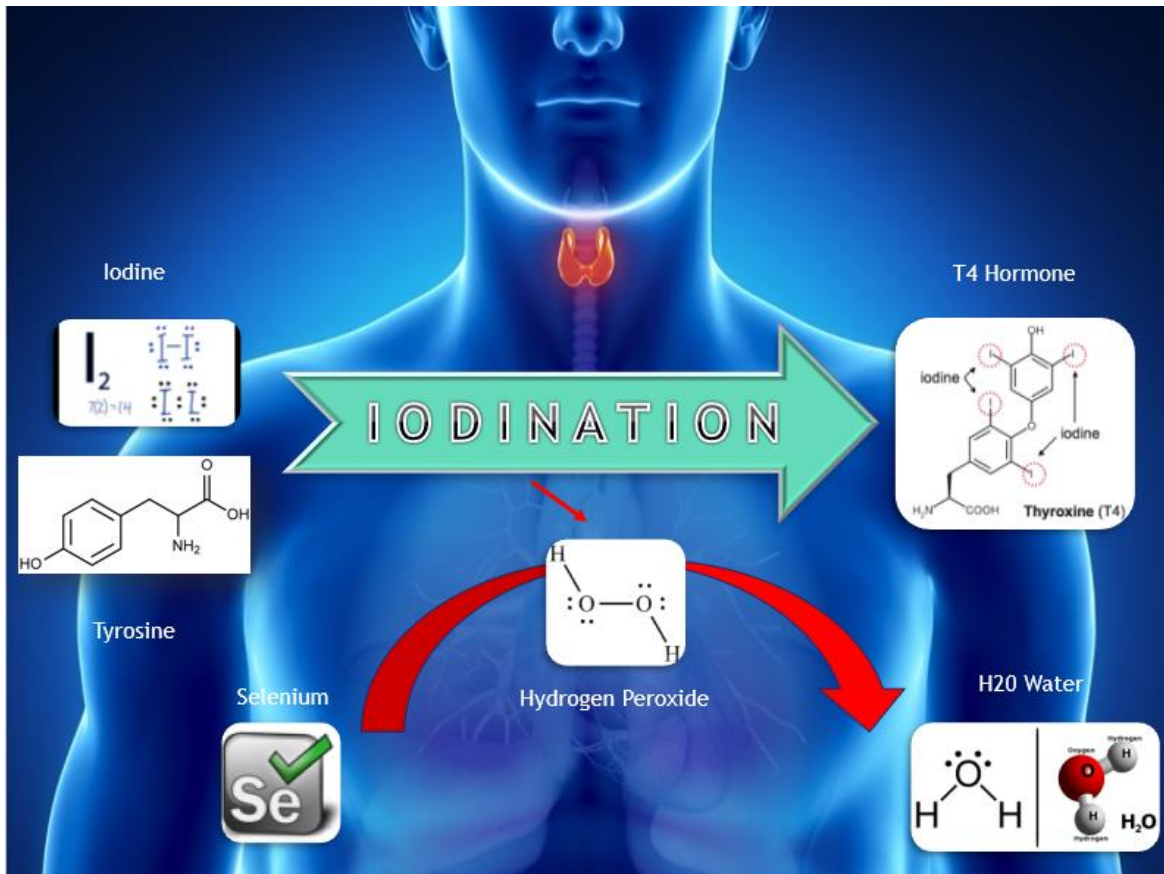


Selenium

Like iodine, the element *selenium* is also essential to our diet and thyroid function. It has anti-inflammatory benefits and can help decrease the antibodies that attack the thyroid gland. It is shown that as little as 200–300 mcg of selenium per day can drop thyroid antibodies 20 to 50 percent in just a few months.¹⁰ Selenium also plays an important role in deiodinase enzymes which helps to activate our thyroid hormone by converting T4 to T3.

One of the by-products of T4 metabolism is hydrogen peroxide (H₂O₂). Hydrogen peroxide can be inflammatory, and selenium helps remove one oxygen molecule from hydrogen peroxide, turning it to water (H₂O), which is safely removed.

¹⁰ (www.ncbi.nlm.nih.gov/pubmed/23046013), (jeffreydachmd.com/2014/01/selenium-thyroid-good-news/)



If a person supplements with iodine but has an unaddressed selenium deficiency, this can create a problem. When selenium isn't there to dampen the production of hydrogen peroxide, the inflammation that accompanies it can potentially exacerbate an autoimmune thyroid attack.

This autoimmune attack is a hallmark of Hashimoto's thyroiditis, and upwards of 90% of thyroid issues in the United States are actually caused by autoimmunity. This means the immune system is primarily behind most thyroid conditions and is not necessarily the fault of the thyroid alone.

So if we're just supplementing iodine to provide the raw material, that's good, but if we're taking abnormally high amounts of iodine and we're producing high amount of hydrogen peroxide without having enough selenium to neutralize it to water (H₂O), the inflammation from the autoimmune condition will continue to occur. This is why it is so important to hold off on supplementing higher doses of iodine without a foundational treatment plan from your functional medicine practitioner. If Iodine is used supplementally, do not use more than the RDA amount of 150mcg till your other micronutrients are dialed first (Magnesium, zinc, selenium, vitamin a, coq10 to name a few).

There is a genetic predisposition that allows most autoimmune conditions to occur in the first place. As we move through the book, we will review the epigenetics triggers that you have control of that could help dampen and suppress potential autoimmunity from occurring in the first place.

Iodine, Selenium, and the Bell Curve of Thyroid Function

Let's start looking at thyroid function by examining the bell curve created by iodine consumption.

The Bell Curve

On one side of the bell curve, we have low thyroid function being driven by inadequate amounts of iodine. If we have inadequate amounts of iodine, then we're not going to have enough iodine coming in to provide the building blocks to make thyroid hormone.

Insufficient iodine intake (most common worldwide), low levels of thyroid hormone and thyroid autoimmune attack can result in a goiter (where your thyroid swells). The TSH (the brain hormone) starts increasing when thyroid hormone starts to drop or when there is insufficient iodine. It's like you're trying to talk to someone across the room but you're whispering, and that person can't hear you unless you increase the volume.

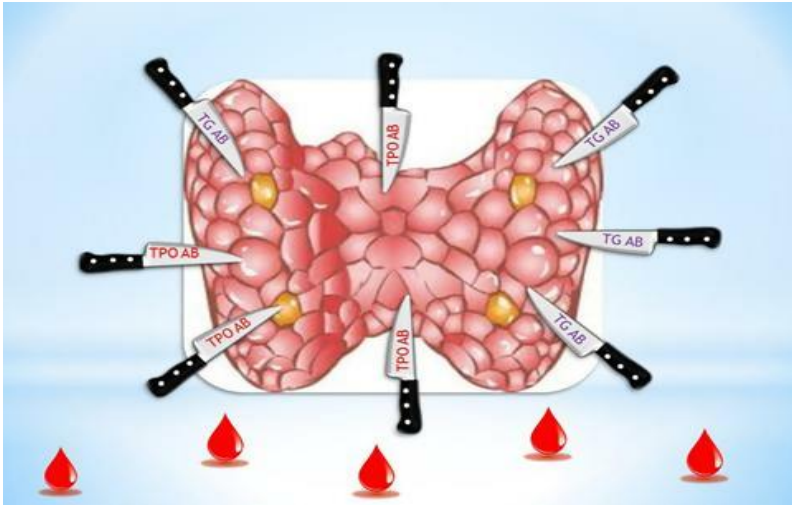
It's the same thing when the pituitary and the brain (TSH) are talking to the thyroid. If the release of thyroid hormone (T4, T3) is too low, the TSH has to increase; it has to start to increase the volume till it gets a response. Without the iodine present as the building block to make thyroid hormone, or adequate levels of T4 or T3, the TSH will continue to increase and the thyroid gland can start to swell. The swelling is a result elevated TSH most times yelling at the thyroid gland when there is not enough hormone being made to respond back "I hear you!"

On the other side of the bell curve, in cultures that consume high amounts of iodine, such as through excessive amounts of iodized salt or extra supplemental iodine, we can see an increased in Hashimoto's. The extra iodine stimulates hydrogen peroxide (H_2O_2), and without the high levels of selenium being there to turn it to water (H_2O), the hydrogen peroxide can create inflammation. The inflammation from the thyroid attack can be enough to enlarge the thyroid to the point where a goiter or nodule may develop.

Our immune system responds by sending B cells to clean up the inflammation, and while that's happening, we're developing specific thyroid antibodies to our thyroid tissue as a result of the immune response. The 2 major antibodies that are increased during the autoimmune response are thyroglobulin (The thyroid protein inside the thyroid follicles) and thyroid peroxidase (An enzymes that helps make thyroid hormone). The more this autoimmune response occurs, the thyroid tissue can become fibrotic, and scar tissue can actually develop. Eventually, the thyroid tissues become less functional, and it's not going

to be able to do what it was designed to do which is make thyroid hormone.

Imagine your thyroid as a four-month reservoir for thyroid hormone. It holds thyroid hormone in little follicles that look like berries. When your immune system attacks your thyroid, it starts to pop each berry one by one. Each knife represents either thyroid peroxidase antibodies (TPO ab) or thyroid globulin antibodies (TG ab).



Now I know that all this can seem like it's complicated. I've tried to simplify it so that you can understand it. However, if you need to re-read the information up until here once again and look at the pictures, please feel free to do so. When I first learned all this, I never had all these details and I found it a little challenging, too. I re-read it and then understood it more—and I know that re-reading these sections will help you understand the next section on what happens when someone is suffering from different thyroid conditions.

CONDITIONS OF THE THYROID

There are many thyroid conditions, and most can be traced to a root cause that resides somewhere else in the body. I'll cover these root causes in part 2 ("Thyroid Connections") of the book. Now, I'll address the common thyroid conditions: Hashimoto's thyroiditis, hypothyroidism, hyperthyroidism (Graves' disease), and goiter.

Hashimoto's Thyroiditis

Hashimoto's thyroiditis is an autoimmune condition of the thyroid, and Hashimoto's causes 90 percent of hypothyroidism cases in the United States.¹¹ Japanese physician Hakaru Hashimoto first noted Hashimoto's in 1912.¹² He termed the disease *struma*

¹¹ www.ncbi.nlm.nih.gov/pubmed/3066320

¹² www.healio.com/endocrinology/thyroid/news/print/endocrine-today/%7B7429d42f-c45f-4de2-a312-e9ba9f6cc860%7D

lymphomatosa.

In Hashimoto's, there's something going on in the body called *molecular mimicry*—which basically means that to the immune system, the proteins of a foreign invader (e.g., bacteria or virus) look similar to the proteins of the thyroid. This results in the immune system misidentifying and not only attacking invaders but also its own thyroid tissue. *Autoimmune* means “immune to self”—the body attacks itself.

In Hashimoto's disease, the thyroid gland will begin to enlarge and possibly become nodular as well. Many things can exacerbate it, including the following:

- Nutritional imbalances (e.g., iodine, selenium, etc.)
- Gluten and grains
- Infections

We covered selenium and iodine already and know they are very important for controlling Hashimoto's and keeping thyroid function optimal. We will cover gluten, infections, nutritional issues, and many other key factors that exacerbate Hashimoto's in depth later in the book.

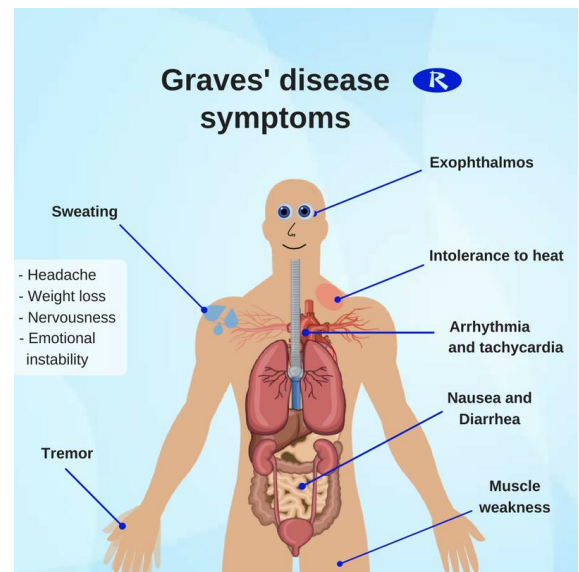
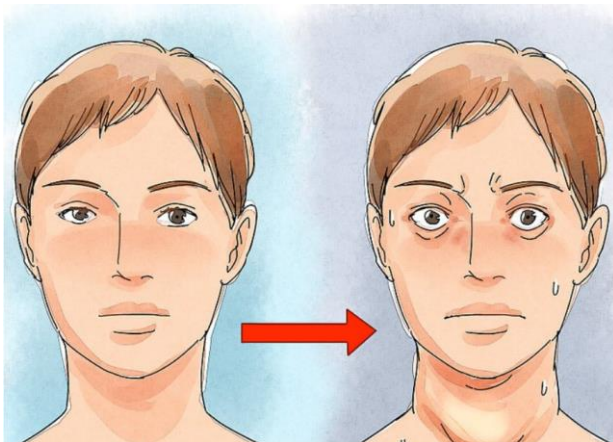
Hypothyroidism

Hypothyroidism is the underproduction of thyroid hormone. Symptoms such as weight gain, dry hair and skin, and fatigue are typically not alleviated by conventional thyroid medications, such as Synthroid or Levothyl. Here's the good news: addressing the root cause can alleviate them. Root causes of hypothyroidism can be traced to many sources, including the following:

- Hashimoto's thyroiditis
- Adrenal dysfunction
- Selenium deficiency
- Iodine deficiency
- Anemia
- Infections
- Blood sugar swings
- Low stomach acid and enzyme production

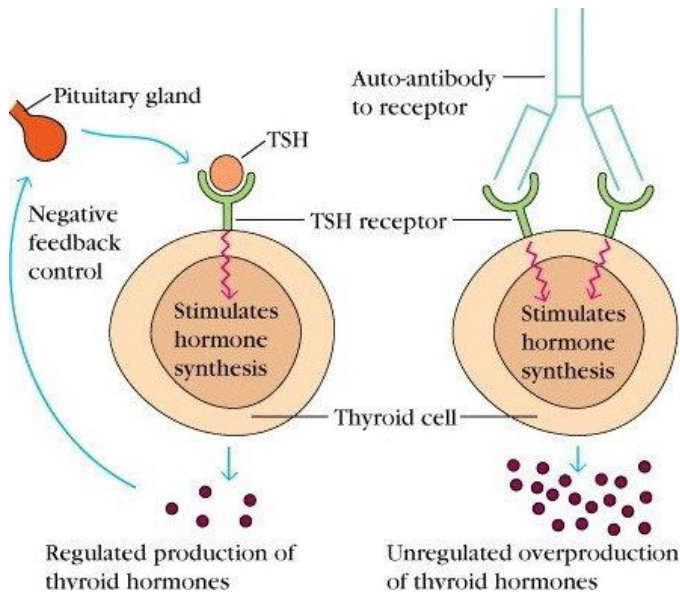
Hyperthyroidism

Hyperthyroidism is the overproduction of thyroid hormone. It is primarily caused by another autoimmune condition called Graves' disease. Graves' disease may present with the following symptoms: Exophthalmos (eyeballs starting to bulge), excessive sweating, increased irritability, insomnia, weight loss, anxiety, diarrhea, shaky, increased heart rate and typically lower levels of TSH. TSH is an inverse hormone, which means *it goes low when thyroid hormone is high*, or vice versa.



If you're already taking thyroid hormone already, that can cause the TSH to drop as well. Conventional doctors will run a TSH test when a patient is on a thyroid supplement or thyroid medication, and they may see an incredibly low TSH and think the patient has a hyperthyroid condition. Yet if they actually run the T4 and T3, they would see that the thyroid hormone levels are perfect. So if someone's on thyroid medication, the TSH will be less reliable, but we typically shoot for a TSH between 0.5 and 2, 1 is ideal. It's very important when looking at TSH you still look at all the other thyroid hormones and take into account where the patient feels best and their basal body temperature too.

If someone's not on thyroid hormone, the TSH can be more valuable at picking up Graves' disease, but we also have to look at the direct thyroid hormone levels instead of fully relying on the indirect brain hormone TSH. We want to run the T4 free, T4 total, T3 free, T3 total, and we also want to run the specific antibodies that are the hallmark of Graves': thyroid-stimulating immunoglobulin (TSI) and TSH receptor antibodies (Thyrotropin receptor antibody – TRAb, which is the same thing). These antibodies essentially stimulate the thyroid to make thyroid hormone by binding into the same receptor site TSH normally would.



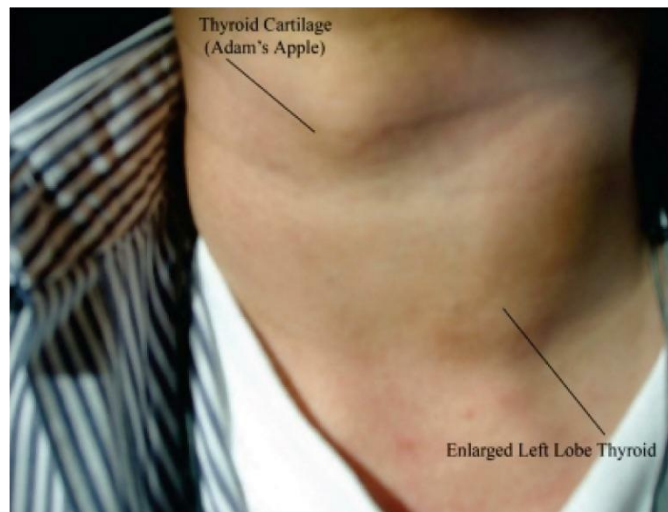
The biggest difference between Hashimoto's and Graves disease is that Graves is an autoimmune attack on the outside of the thyroid that stimulates more thyroid production (see above). While Hashimoto's is more of an internal autoimmune attack on the thyroid tissue (thyroid protein and enzymes). Patients with Hashimoto's may present with Graves-like symptoms because the autoimmunity condition can cause thyroid hormones to spill from the thyroid follicles during the autoimmune attack. Our thyroid stores about three to four months of thyroid hormone, so there are some reserves within the thyroid tissue. This jump in hormone levels can feel like a hyperthyroid situation like in Graves disease. That's why you want to test all thyroid hormones and antibodies to make sure you know what you are dealing with.

If it's not Hashimoto's, we want to fully evaluate if it is Graves because Graves' left untreated can cause heart damage or stroke and can be life-threatening. If we are having hyperthyroid symptoms, we want to get the right test done to evaluate if Graves' is occurring. Once Graves' disease is diagnosed, depending on how advanced it is, we may be able to add natural strategies to cool the thyroid down before resorting to a more extreme approach, such as removing the thyroid or performing a radioactive thyroid ablation, which shuts down the thyroid using radioactive iodine. The sooner we catch it, the more conservative we can be in our strategy to control and manage it.

The typical medications recommended for Graves are typically Methimazole and Propylthiouracil that block thyroid hormone synthesis and thyroid hormone conversion (T4 to T3). These medications may be necessary if there is an acute flare while you work on getting to the root cause with your functional medicine doctor. Always get Graves ruled out by your medical doctor and try and hold off the more extreme surgical and radiation options if medically possible.

Goiter

A goiter is a swelling of the thyroid, and it can be present in any of the conditions discussed above, but the most common cause of a goiter is iodine deficiency. As shown in the Hokkaido, Japan study in the “Iodine” section of this chapter, too much iodine can also be a culprit in causing goiter. This is why it is so important to work with your practitioner on finding the ideal balance.



THYROID PATIENT EXAM

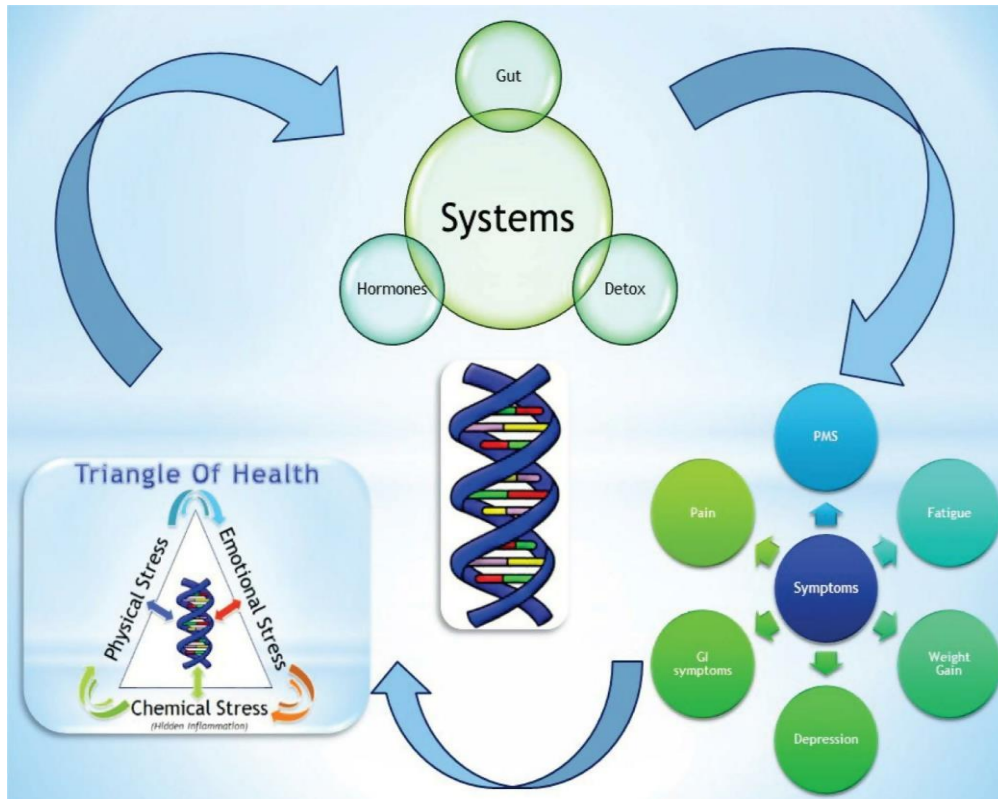
During the patient exam to assess the thyroid, the Triple-S Approach is a technique that can be used to thoroughly review your health status. The Triple-S Approach focuses on the following:

1. Stressors (the Triangle of Health)
2. Body Systems (or signs)

3. Symptoms

Stressors (The Triangle of Health)

Stressors come in three major forms, and these make up the Triangle of Health.¹³ The Triangle of Health is a concept that shows the need for balance among all three stressors: emotional, physical, and chemical.



Emotional stress includes stress in relationships, finances, family, friends, work and so on. Or maybe you're just sick and tired of being sick and tired. These are all strong emotional stressors that can keep us from not feeling optimal.

Physical stress can be too little exercise—you're sitting down all day; you're sedentary—or it can be you are exercising too much. Maybe you are doing Cross Fit or overdoing it as you train for a marathon. Physical stress can also be an unresolved injury (e.g., a back injury or an old knee injury) that's keeping you in pain.

Most of us are familiar with emotional and physical stressors, but there's one more on the triangle, and that is chemical stress—also known as the hidden stress because we may

¹³ The Triangle of Health is a concept created by Dr. George Goodheart. Watch my video on the Triangle of Health at https://www.youtube.com/watch?v=nRPL_i6vSxQ.

not be aware it exists.

Chemical stressors can include a whole list of possibilities:

- Nutritional deficiencies needed for healthy thyroid function, like iodine, tyrosine, zinc, selenium, or magnesium
- Blood sugar imbalances
- Food allergies like gluten, dairy and soy to name a few.
- Gut infections and Dysbiosis or SIBO (Imbalances in our gut bacteria)
- Malabsorption (taking in enough nutrients but not properly absorbing them)
- Low stomach acid and enzymes
- Insulin resistance and blood sugar imbalances.
- Poor sleep and recovery
- Exposure to toxins like alcohol, tobacco, drugs, pesticides, mold toxins, and exogenous hormones in our food, or excessive fluoride from drinking water

The idea in the Triangle of Health is that all the stressors accumulate. If we have chemical stress consuming gluten and alcohol. This chemical stress from our diet may create excessive inflammation that leaves our joints extra sore. The physical stress from our sore joints may keep us from doing things we enjoy like playing with your kids. Not doing the things we love may cause emotional stress.

You can see how the stressors on the Triangle of Health can literally impact one another: by creating inflammation on one side, it spills into the other side of the triangle, and soon enough all of these stressors have reached the top of your stress bucket causing it to overflow (see the image below).



Stressors may be referred to as the *allostatic load*, but I prefer to call this a “*Stress bucket*” because this provides a clear visual of how stress can fill up and overflow and create symptoms in your life. When the stress bucket overflows, that’s where the problems happen with our body systems.

Body Systems

During a review of the body systems, your practitioner will look for signs of thyroid dysfunction. The systems focused on will include the:

- Hormonal system (adrenals, thyroid, and male or female hormones)
- Digestive system
- Immune systems
- Detoxification system

There’s a difference between signs and symptoms. Medical signs are things that can be seen clinically. Symptoms are things you may feel but they may be harder to verify like depression or anxiety.

Specific signs may present as the thinning of the outer third of the eyebrow, pale skin, or vertical or horizontal ridges in the fingernails (indicating protein malabsorption). Though you might be consuming enough protein, you might not be digesting it due to a gut infection or low stomach acid. That creates malabsorption and the inability to break down the protein and utilize it for healthy thyroid and hormonal function. Each system affects the other, and once the body systems become overwhelmed, we start having symptoms.



Symptoms

There are many symptoms that could result when you have a thyroid disorder, and a good functional medicine practitioner will review these during an exam. In functional medicine, we don't look at symptoms with the goal of prescribing a drug or a supplement to cover up the symptoms; we only look at the symptoms to trace them backwards, upstream to the body systems that may not be functioning properly.

Common symptoms of thyroid disorder include the following:

- Chronic fatigue
- Difficulty losing weight
- Depression
- Muscle or joint aches
- Low libido
- Cold all the time
- Water retention
- Dry skin
- Eczema
- Fibromyalgia
- PMS
- Menopause
- Diffuse hair loss or dry hair
- Cold extremities

- Constipation
- Poor memory
- Poor concentration
- Anxiety
- Weakness
- Shortness of breath
- Palpitations
- Heavy menstrual flow
- Poor motivation

In the Triangle of Health, before a thyroid issue ever comes to light the first dominos to fall are the “*Stressors*.” The second dominos are the “*Body systems*” become stressed and start to dysfunction. Last but not least, “*Symptoms*” begin to manifest. This is the general pattern most patients go through; with thyroid patients’ fatigue, cold hands, cold feet, anxiety, depression and brain fog are common. These symptoms tend to occur years after the stressors accumulate and affect the body systems.

The Conventional vs. the Functional Approach, Part 2

The typical conventional-medicine approach is to treat each symptom and knock them off one by one. So if there were depression, for example, you’d get an antidepressant. If there is hormonal imbalance, you might get a prescription for birth control pills. Even natural medicine is guilty for choosing herbs and nutrients to do the same thing. Though this might relieve some symptoms, it doesn’t address the root cause and alleviate the problem long-term.

In functional medicine, it may be necessary to treat the symptoms short-term. And that’s OK as long as the long-term goal is to eliminate the stressors and heal the body systems and the root cause. The key is to treat and heal holistically, addressing diet, lifestyle, stress management, sleep, blood sugar, adrenals, thyroid, infections, gut bacteria imbalance, toxins and so on. If we eliminate the stressors and treat the body systems that aren’t functioning properly, the symptoms will eventually heal.

THYROID LAB TESTING

For thyroid testing, there are *ideal lab ranges* (used in functional medicine) as well as standard lab ranges (used in conventional medicine) for the same tests.

Standard lab ranges are basically created by lumping 95 percent of the population as normal. The remaining 5 percent is considered not normal and is broken into 2.5 percent high and 2.5 percent low.

This is why your lab tests are “normal” but you still feel sick:



In this “normal” area you will find lab results that a doctor will say are “normal” but they are not optimal.

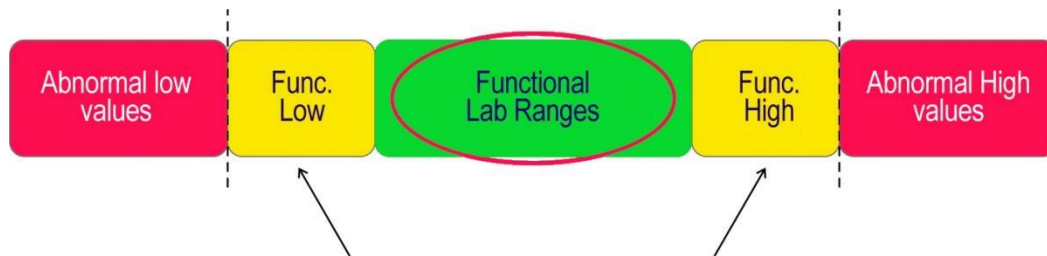
The problem with the bell is as the general population gets sicker, the bell curves so called “Normal range” must get wider to compensate. If we look at chronic degenerative disease over the last three or four decades, we see more cancer, more heart disease, more obesity, more diabetes, and so on.

If we know more people are dying of chronic disease, what does this mean for our lab reference ranges? The wider our so called “Normal ranges” become, there is guaranteed to be more people with health challenges (symptoms), caught somewhere in the middle. The problem with this is their doctors will tell them they are fine, it’s all in their head, or they’re just getting older. Essentially, people are being told to go home, get sicker and then years down the road you may come back on our tests with a diagnosed problem. This method just wastes too much time and causes too much pain and suffering in the process.

Functional medicine looks at the ideal normal range to get an earlier indicator of potential thyroid dysfunction or imbalance. These ideal ranges are narrower, allowing us to look at someone’s thyroid on a spectrum of health, rather than to simply treat his or her dis-ease.

Let's say that the "Normal range" on a metaphorical health test is based on a scale of 1 to 10. Your primary care physician (PCP), however, is happy as long you fall somewhere within the range before he or she diagnoses you. Well, what happens if you start to have symptoms around 8? Your PCP is telling you you're fine because you're under 10, but you're saying, "I don't feel good." Their translation is *"You're fine, the technology that we're using to assess you isn't sensitive enough. Come back in a year or two and maybe you'll test positive for something then."* In other words, come back when your condition is worse.

This is why your lab tests are "normal" but you still feel sick:



In this area (functionally low or functionally high), you will find lab results that a doctor will say are "normal", but they are not optimal

In functional medicine, we use the ideal range that's more sensitive, and we test more than just the TSH. We also look at T4 total and free, T3 total and free, T3 uptake, reverse T3, and thyroid antibodies thyroglobulin antibodies (TG ab) and thyroid peroxidase antibodies (TPO ab). If we measure all these markers, we get a better window into the thyroid glands overall function. This also helps us confirm if there is an active autoimmune condition like Hashimotos when certain antibodies are present like TPO ab and TG ab are present.

We know that if the thyroid gland is getting attacked by these antibodies, it will eventually result in hypothyroidism over time. Over time the thyroid's healthy functional tissues will eventually turn sclerotic and will lose the capacity to produce health levels of thyroid hormone.

I have a reference handout on lab testing ("Blood Test Review") that you are welcome to download: www.justinhealth.com/blood-test-road-map that will provide all of the thyroid reference ranges as well as an excel spreadsheet to track your own lab markers.

Thyroid-Stimulating Hormone (TSH)

Standard normal range: 0.5–4.5 μ U/mL | Ideal healthy range: 0.5–2.0 μ U/mL

TSH is a pituitary hormone that signals the thyroid to make T4. It "is a poor measure for

estimating the clinical and metabolic severity of primary overt thyroid failure.”¹⁴ However, it is the only thyroid test, for the most part, used by conventional medicine. Typically, if TSH drops low (meaning thyroid hormone is high), it’s a way of diagnosing hyperthyroidism or even Grave’s disease. If TSH levels becomes elevated (meaning T4 and T3 thyroid hormone drop typically) there could be a deficiency in iodine, or an active autoimmune issue, resulting in thyroid swelling or inflammation.

The problem with TSH is that it’s a screening test, and it takes many, many years for it to elevate. So, in other words, a problem can be building for years before testing by conventional medicine discovers it.

If TSH is elevated, we know there’s definitely a problem with the thyroid gland. But there are many people who have TSH tests that are normal, so a potential thyroid condition is missed by the standard TSH test. However, if they had looked at the downstream hormones, they could have seen significant imbalances in T4, T3, thyroid antibody levels, and even T3 uptake.

The standard range is 0.5 to 4.5 $\mu\text{g}/\text{dL}$, but we’re going to make that range a bit tighter. Ideally, research shows that we need to look at about 1 to 2.5 $\mu\text{g}/\text{dL}$ as normal.¹⁵ Using a narrower TSH range can be super helpful at assessing if you have good thyroid function. When I start to see TSH go 3 $\mu\text{g}/\text{dL}$ or above, I become a little bit suspicious that there may be an underlying thyroid condition starting to develop.

Thyroxine (T4) Total

Standard normal range: 4.5–12.0 $\mu\text{g}/\text{dL}$ | Ideal healthy range: 6–10 $\mu\text{g}/\text{dL}$

When we look at hormones individually, we have to break them into a *free* and *protein* percentage. A *total* T4 count consists of 98 percent protein-bound hormone; meaning 98 percent can’t really bind into a receptor site, and 2 percent free, which is the part of the hormone that can actually do something in the body.

A protein-bound hormone functions as if you were trying to write with a pen cap on. You can’t write—the ink doesn’t make contact with the paper, so nothing happens. The pen cap has to be off for that pen to work.

Total T4 is when we look at both free (2%) and protein bound (98%), which equals 100% of T4 hormone.

¹⁴ <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC143526/>

¹⁵ <https://www.aace.com/files/final-file-hypo-guidelines.pdf>

Thyroxine (T4) Free

Standard normal range: 0.8–1.7 ng/dl | Ideal healthy range 1.0–1.5 ng/dl

The *free* T4, that other 2 percent, is like writing your name with the pen cap off. The ink will make contact with the paper and serve a purpose—to write your name. This is free T4: it functions and provides an effect. That effect for your thyroid is the enhancement of metabolism, energy, hair, gut function, mood—all of the things that are important for optimal health.

The thyroid then converts 20% of that T4 into T3. And then the other 80%, as mentioned earlier, gets converted peripherally throughout the body—in the liver, gut, and by healthy adrenal stress hormone levels.

When we test T4 levels, we want to see an ideal total T4 in the range of 6 to 10 µg/dL and a free T4 in the range of 1.0 to 1.5 µg/dL. Levels outside of these ranges are flags that something is going on with the thyroid.

Triiodothyronine (T3) Total

Standard normal range: 71–180 ng/dL | Ideal healthy range: 100–160 ng/dL

When we look at T3, our active thyroid hormone, we also have to break it into the same *free* and *protein* percentages as T4. The *total* T3 (98 percent protein-bound plus 2 percent free) and the free T3 are going to be the two tests we look at.

As with free T4, the free T3 levels are always going to be the most important to look at. But it's also good to look at the total T3 just to get a window on how the gland is functioning and producing thyroid hormone.

T3 is going to be the most important level to focus on. One of the major issues that we see is when T4 does not appropriately convert to T3, and there are many reasons this happens. Factors that can affect conversion include the following:

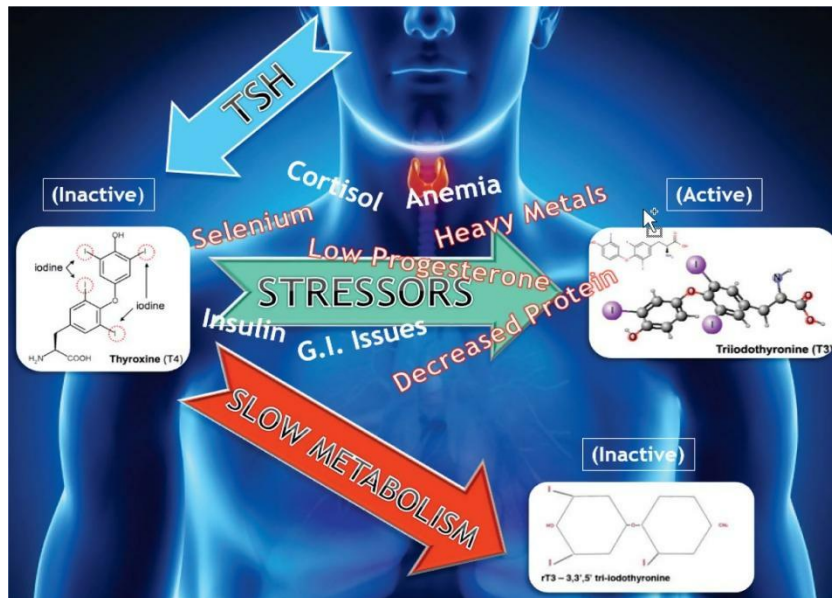
- Protein deficiency
- Selenium deficiency
- Zinc or magnesium deficiency
- Low iron or ferritin levels
- Imbalanced insulin levels
- Imbalanced cortisol levels
- Increased inflammation
- Gut infections and leaky gut

- Toxins like heavy metals, mycotoxins from mold or pesticides

Triiodothyronine (T3) Free

Standard normal range: 2.0–4.4 pg/ml | Ideal healthy range: 3.0–4.4 pg/ml

The free T3, that 2 percent of the T3 hormone, is the part of the hormone that is unbound by the proteins that transport it. This small amount of unbound hormone is the portion of T3 that the body actually uses. When free T3 is at proper levels, this enhances energy, mood, hair and skin, and so many other things that make us feel good and keep our bodies at optimal function.



When we test T3 levels, we want to see an ideal total T3 in the range of 100 to 160 ng/dL and an ideal free T3 in the range of 3.0 to 4.0 pg/ml. Levels outside of these ranges are flags that something is going on with the thyroid.

T3 Uptake

Standard normal range: 24–39% | Ideal healthy range: 27–37%

T3 uptake looks at how the body is able to utilize thyroid hormone. If we have low T3 uptake, we're not utilizing thyroid hormone as well, like with low t3 free levels. If we're seeing high amounts, then we're taking on too much, potentially due to other hormonal imbalances, like elevated testosterone.

Some factors that can block T3 uptake are elevated estrogen levels through birth control pills or estrogen in the environment. We'll also see the T3 uptake go low when there is

inflammation due to thyroid autoimmunity or inflammation in the body due to an infection. High levels of T3 uptake can happen when we have elevated amounts of testosterone. This is very common in female patients that have polycystic ovarian syndrome (PCOS).

Reverse T3

Standard normal range: 9–24.1 ng/dl | Ideal healthy range: 14.9–24.1 ng/dl

Reverse T3, are equivalent to metabolic blanks in our thyroid gun so to speak. Reverse T3 binds into the thyroid receptor site just like T3 free, without the same metabolic response. This is just like put blank in a real gun, when you pull the trigger, there is a loud noise but no bullet. Lower reverse T3 levels are a sign of a stress and a slower metabolism. The more stress we have, the more T4 converts to reverse T3, instead of healthy active T3. Finding reverse T3 outside of the ideal normal range would alert the functional medicine practitioner that there is stress that needs to be addressed.

Thyroglobulin Antibody (TG ab or Antithyroglobulin)

Standard normal range: 0–0.9 IU/ml | Ideal healthy range: 0–0.9 IU/ml

The presence of the TG ab above the normal range should arise suspicion of autoimmunity, or Hashimoto's. The immune system calls on this antibody to fight the thyroid when it mistakenly sees it as an invader, and it needs to be addressed before the body can do too much damage to itself. Patients with TG ab can also have TPO ab as well. Some may even switch back and forth.

Thyroid peroxidase Antibody (TPO ab)

Standard normal range: 0–15 IU/ml | Ideal healthy range: 0–15 IU/ml

Like TG ab, the presence of the TPO ab above the normal range should arise suspicion of autoimmunity, or Hashimoto's. The immune system also calls on this antibody to fight the thyroid when it mistakenly sees it as an invader, and it needs to be addressed before the body can do too much damage to itself. Patients with TPO ab as I mentioned above, can also have TG ab as well. Some may even switch back and forth between the two antibodies.

Thyroid Temperature Testing

Thyroid temperature is important because heat it is one of the by-products of metabolism. We can use heat and temperature as a measure of how someone's thyroid gland is functioning.

You can measure your thyroid temperature using a good-quality fertility digital thermometer. Place the thermometer either in your armpit or in your mouth. A healthy thyroid temperature range if you're using the axillary, or the armpit, area is going to be 97.8 to 98.2 degrees. If you're measuring by mouth, it will be 98.2 to 98.6 degrees. Check the temperature first thing in the morning each day to see if it is consistently in that healthy range. Do this before you get out of bed and start moving around. If your temperature is dropping, or fluctuating greater than 0.3 degrees each day, you may have some type of adrenal stress (High or low cortisol rhythm imbalance), even if your temperature is in the normal range.

If the temperature runs chronically low without fluctuations (e.g., 97.2, 96.8 degrees), that's a sign of low thyroid function. This type of testing is not an exact science but can provide a noninvasive inexpensive way to assess your thyroid function. You would always want to follow up with thyroid blood testing to be certain.

For a woman, thyroid temperature testing can be done on days 2-6 of your cycle. Since temperature will drop before ovulation and will rise again when she enters the luteal phase (the second half of her cycle), measuring her temperature early on will help get an accurate reading without the interference of other hormones. Looking at that those first five days after her period can be really helpful at getting a good sense at what her temperature is without other hormones influencing it.

I have handouts on the procedure for temperature testing ("Basal Temperature Instructions") that you are welcome to download: www.justinhealth.com/temperature-test.

Other Tests for the Thyroid

Other tests your functional medicine practitioner might perform include palpating the thyroid, which simply means manually feeling or pressing externally to check for asymmetry, nodules or bumps. He or she may send you for an ultrasound to see how the thyroid tissue looks. Up to 40 percent of thyroid autoimmunity blood testing can come back with a false negative, meaning the test is showing negative, but the person really is positive for Hashimoto's. When the practitioner feels he or she may be getting a false negative, the patient can be sent for an ultrasound to see if anything comes up there. If the exam, lab work, and ultrasound are all coming back clean, it's unlikely there is an autoimmune condition present. I typically assume there is an autoimmune issue in the beginning when dealing with patients with thyroid symptoms.

The last way to confirm Hashimoto's is through a needle biopsy, I do not typically recommend this unless we are trying to rule out some type of thyroid cancer.

To order your own thyroid test with all of the markers mentioned above please click here: <https://justinhealth.com/products/complete-thyroid-panel/> - this test can be completed at a local quest diagnostics lab.

THYROID HEALTH AND HEALING

We'll explore thyroid health and healing options in depth when we delve into the connections chapters. Briefly, we want to do the following to assure thyroid health and healing:

- Make sure your diet is anti-inflammatory and nutrient-dense
- Get your gut functioning correctly
- Eliminate infections
- Properly manage your stress
- Address adrenal function
- Eliminate or limit gluten consumption
- Limit toxins to de-stress your liver and detoxification system
- Apply natural functional-medicine treatments
- Get to the root cause of your thyroid issue

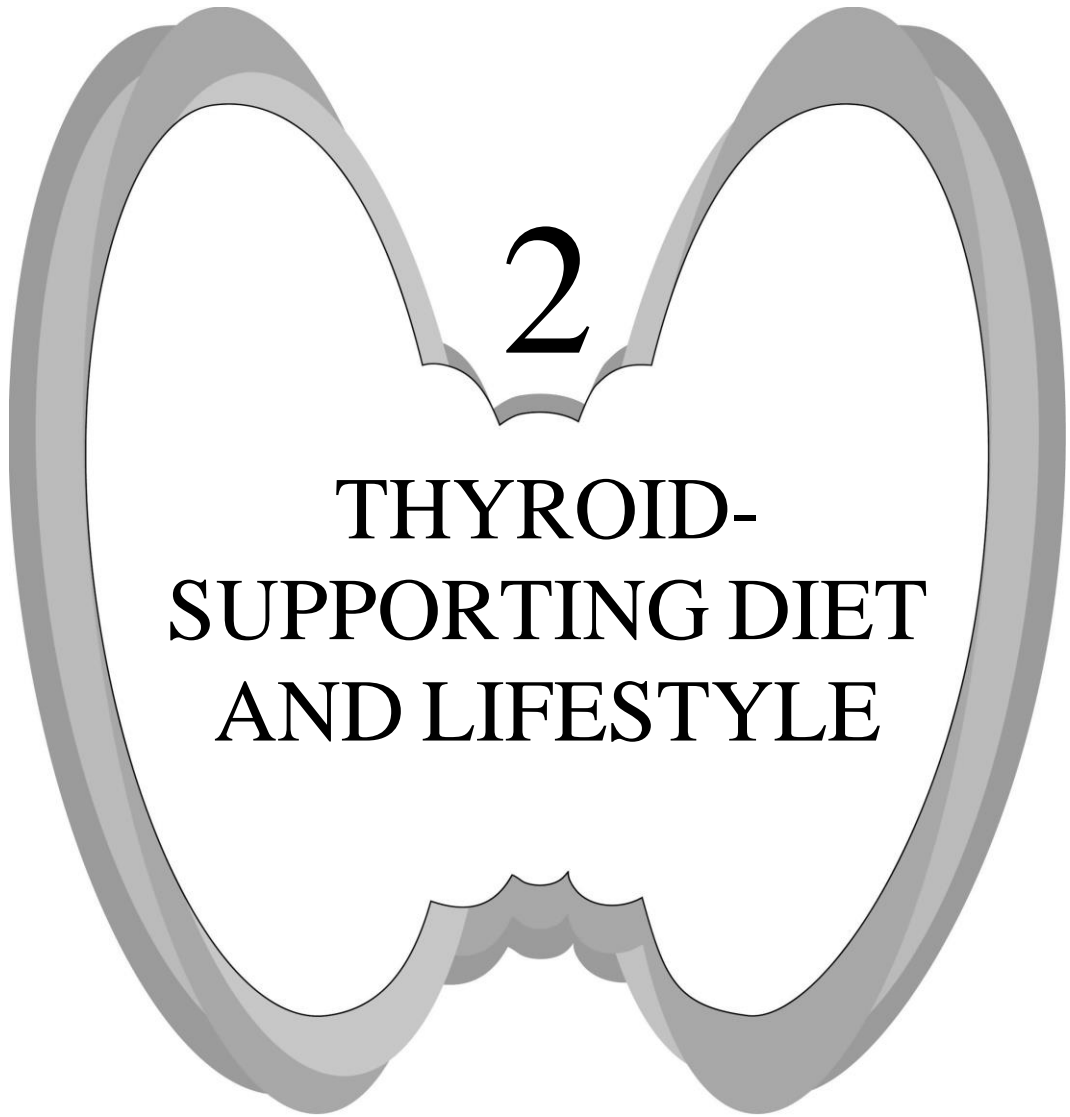


Five Key Points to Remember

1. The main function of the thyroid gland is to serve as the center of metabolism in the body. The thyroid is the body's thermostat.
2. Twenty percent of thyroid hormone conversion (T4 to T3) happens in the thyroid. The other 80 percent happens in the liver and in the gut, depending on stress levels.
3. Iodine and selenium are the main elements for thyroid hormone production. However, there is a fine balance between too much and too little. Work with your functional medicine practitioner to find this balance.
4. Most thyroid conditions are the result of a root cause that resides somewhere else in the

body. Finding the root cause is the key to healing the thyroid.

5. Standard lab ranges, typically used by conventional medicine, are too wide and can delay the diagnosis of a thyroid condition by years. It is best to look at ideal lab ranges, used in functional medicine, and address thyroid issues before they become out of control.



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THYROID- SUPPORTING DIET AND LIFESTYLE



It's not "all in your head."

Your fatigue, weight gain, mood issue and brain fog are not just in your head. You may even be told this is a symptom of aging, even if your lab tests seem to be "normal." Many people are not sick enough to be picked up by the standard testing and assessment conventional medicine provides. Most often are given a quick and easy diagnosis that that may not address the root cause and only manages the symptoms in the short run.

In "The Thyroid Reset" you will learn the importance of assessing the health of your adrenals, hormones, digestion, detoxification, and the presence of infections. Many of these are commonly overlooked but are incredibly important. These underlying issues are linked to nutrient absorption, autoimmunity and hormone imbalance like in hypothyroidism.

Thyroid disorders are one of the most common illnesses plaguing us as a nation today. "The Thyroid Reset" will help lay out a plan on how you can keep your thyroid, adrenal, hormones, and body in tip-top shape? Learn the simple health habits that will help set you on the path to optimal thyroid health.