

Optimal Thyroid Function

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Thyroid hormone regulates the “metabolic engine” in the body, determining how quickly we burn calories. In addition, the thyroid helps to regulate body temperature, hair growth, joint function, water metabolism, and a host of other functions in the body.

Either too much OR too little thyroid can create symptoms, some of them life-threatening. As with *any* substance in the body, thyroid has an optimal range, which we will discuss in more detail below.

Symptoms of hyper-thyroidism (too much thyroid production):

- Goiter (enlarged thyroid)
- Warm, moist skin
- Lighter menstrual bleeding
- Jittery feeling, as if you have drunk too much coffee
- Insomnia
- Weakness
- Frequent bowel movements, possibly diarrhea
- Weight loss
- Tachycardia (rapid heart rate)
- Fine tremors in the hands
- Bulging eyes (exophthalmus), eye pain, and/or eye irritation

Symptoms of hypothyroidism (too little thyroid production):

- Fatigue
- Weight gain
- Feeling chilly
- Low body temperature
- Heavy menstrual periods
- Joint and muscle pain
- Facial puffiness and swelling around the eyes
- Hand and/or ankle swelling
- Hair loss
- Dry skin
- Soft, brittle, or splitting nails
- Constipation
- Numbness and tingling in the hands and feet
- Thinning of the lateral (outer) one-third of the eyebrow

If you suspect that you may have a thyroid problem, *please* consult your primary care physician. Many other diseases can mimic low thyroid function.

Testing

- TSH (Thyroid Stimulating Hormone): made by the pituitary, TSH signals the thyroid gland to produce **more** thyroid. This is an *indirect* measure of how well the thyroid gland is functioning. The higher the TSH level, the more the thyroid gland is struggling. Many conventional physicians only test TSH levels. We will discuss below why TSH alone may not accurately predict what is happening with the thyroid.
- T4: this is the inactive, “storage” form of thyroid. The “4” refers to 4 iodine atoms in the molecule. An enzyme (name) cleaves off one of the iodine atoms, and T4 becomes T3.
- T3: This is the free, *active* form of thyroid hormone.
- Thyroid antiglobulin: this molecule, produced by the immune system, attacks our own thyroid. This auto-immune reaction (the immune system mounting an attack on a particular tissue or organ) is called “Hashimoto’s thyroiditis.” Most conventional physicians do not test for thyroid antiglobulin, because the presence or absence of auto-immune disease would *not* change their treatment recommendations. From a holistic medical perspective, however, this is very useful information and guides the types of treatment I would recommend OR discourage.

NOTE: in early stages of Hashimoto’s thyroiditis, the thyroid gland usually *over-produces* thyroid, leading to hyperthyroidism (Grave’s Disease). As Hashimoto’s progresses, the thyroid gland tires and begins to *under-produce* thyroid (hypothyroidism). Whether you have hyper- or hypothyroidism, you should be checked for thyroid antiglobulin.

Optimal ranges for TSH

As mentioned above, most conventional physicians *only* test TSH levels, assuming that the pituitary gland is functioning optimally and signaling the thyroid appropriately. This may or may not be a correct assumption. The pituitary can struggle (more about this below), and sometimes the thyroid does not respond to the pituitary gland’s signals.

Currently many physicians are debating the exact “optimal” range for TSH. Some labs consider up to 5.5 a “normal” TSH reading. Board certified endocrinologists are considering making 3.5 the top of the normal range. Function medicine physicians, those aiming for optimal function in the body, consider 2.5 the top of the normal range.

For those supplementing thyroid, I like to see TSH levels below 1.5. Some people do not feel completely well until their TSH levels are much lower than the bottom of the usual “normal” range. I educate patients about signs of too much thyroid activity (see above, symptoms of “hyperthyroidism”) so that we can adjust the dose if necessary.

When working with a patient, I look at the current TSH levels, and T3 and T4 if they are available. I’m also interested in seeing what TSH levels have been doing over time. Remember that TSH has an inverse relationship with thyroid: the higher the TSH level, the *less* thyroid hormone the body is producing. If TSH levels have been gradually

increasing over time, I know that the thyroid gland has been struggling more and more to produce enough thyroid hormone.

The most likely time for a woman's thyroid gland to struggle is during major hormonal transitions: puberty, pregnancy, and peri-menopause and menopause. During these major life transitions, *all* of the hormones are fluctuating, which definitely places a greater strain on the thyroid. Of course, the thyroid gland can falter at other times in a woman's life; these are simply the three most likely times.

Pituitary

As mentioned above, most conventional physicians assume that the pituitary is healthy and functioning normally. Called "the master gland," the pituitary is the feedback loop for all of the major glands in the body: the ovaries, adrenal glands, and thyroid.

The entire hormonal system in the body is webbed together. If any of the glands are struggling, you will generally find signs of strain in other glands as well. When the ovaries, adrenals, and/or thyroid are going through major changes, the pituitary is likely to be strained as well.

We do not have simple, easy laboratory tests to check pituitary function. The only test we have entails injecting someone with hypothalamus hormones (a gland that "directs" the pituitary) and then drawing several blood samples over the next few hours to see if the pituitary gland responds appropriately (increasing or decreasing its hormone output). Any time a test involves reflexive testing (repeated blood draws after a challenge), the test is rarely ordered.

I know from clinical experience that some patients, particularly women, have had pituitary damage. The most common and easily diagnosed "damage" is a pituitary tumor. Women with pituitary tumors usually begin to make breast milk when they are *not* pregnant or nursing a baby.

Less commonly diagnosed are "sub-clinical" forms of damage, things that would not easily show up on test or x-rays. The most common cause of pituitary damage I have seen is radiation exposure(s).

Interestingly, the thyroid also reacts strongly to radiation exposure. The thyroid selectively "takes up" radiation in the body, acting as screen that protects other organs and glands from high radiation exposure.

Thyroid supplementation for hypothyroidism (low thyroid function)

If you have thyroid testing done and discover you have low thyroid levels, carefully consider what type of thyroid medication would best suit your needs.

Most conventional physicians prescribe Synthroid or Levo-thyroxine. Both are forms of T4, the *inactive* form of thyroid hormone. Remember that the body requires enzyme 5' Deiodinase to cleave off one of the iodine atoms to make T3, the active form of thyroid.

Some people do not make enough 5' Deiodinase. These patients are low in T3, and may still suffer from low thyroid symptoms, even though they are taking a thyroid prescription.

This decreased ability to convert T4 to T3 is called "Wilson's Syndrome," named after E. Denis Wilson, M.D., who first treated and wrote about the condition. Dr. Wilson developed a special protocol using T3, or Cytomel, to correct the 5' Deiodinase enzyme levels in the body.

Side note: the pituitary does *not* differentiate between T3 and T4 when it is monitoring blood levels of thyroid hormone. That explains why patients with Wilson's Syndrome often have normal TSH levels. Only by testing T3 and T4 levels, and correlating the testing information with a patient's symptoms, would a physician arrive at a diagnosis of Wilson's Syndrome.

Many patients who do not respond well to Synthroid or Levo-thyroxine fare much better taking Armour Thyroid or Naturethroid. These thyroid prescriptions are made from dessicated (dried) animal thyroid.

Before 1970, physicians could prescribe only Armour thyroid. Only in 1970 did synthetic forms (Synthroid) of thyroid hormone become available. Based on clinical studies conducted in the 1950's, many physicians suspected that patients were receiving unpredictable ratios of T3 and T4 in the animal form of thyroid. This research was repeated in the 1990's, proving that T3 and T4 levels in dessicated animal thyroid were much more stable than previously thought.

I generally prescribe Armour thyroid OR Naturethroid. The only exception to that rule is patients with Hashimoto's Thyroiditis. For those already suffering with this auto-immune condition, the animal source of thyroid would be perceived as "foreign," and the immune system would begin to attack the "invading" foreigner. With the immune system on red-alert, the body would produce more thyroid anti-globulin, and the thyroid gland would be caught in the cross-fire. In other words, the animal source of thyroid could worsen (and very rarely *create*) this particular auto-immune reaction.

For those suffering with Hashimoto's, I prescribe a combination of Levo-thyroxine or Synthroid (T4) with Cytomel (T3).

What about taking iodine to support my thyroid?

A century ago, many Midwestern women suffered with low thyroid function because of a deficiency of iodine in their diet. At that time we did not have the shipping abilities we have today, and many people in the middle of the continent did not have iodine-rich seafood or sea vegetables (e.g. sea weed) to eat, especially in the winter. The Midwestern diet also relied heavily on Brassica or Cruciferous family foods, e.g. cabbage, broccoli, cauliflower, and kale. In large amounts, these vegetables can inhibit thyroid function.

Remember that iodine atoms are a key component of thyroid hormone, which is why iodine levels in the body are so important.

To remedy this situation, salt companies added iodine to salt. For the most part, this remedied the situation.

Edgar Cayce suggested taking a purified liquid iodine supplement, Atomidine. This particular preparation of iodine can be taken internally OR used externally. For those with true iodine deficiencies, these iodine supplements really helped.

CAUTION: some nutritionists and health food store personnel will recommend iodine for any thyroid problem. PLEASE NOTE: for those with Grave's Disease (hyperthyroidism, too much thyroid), increasing iodine can cause a "thyroid storm," or "thyrotoxicosis." During a thyroid storm, the body suddenly, dramatically increases thyroid production. This can cause a rapid increase in heart rate, anxiety, and potentially a heart attack.

For those with Hashimoto's thyroiditis, iodine can also cause a thyroid storm. This is another reason I want to know if patient's have an underlying auto-immune disease that is driving their hypothyroidism (low thyroid function).

PLEASE consult with someone trained in medical nutrition, e.g. a naturopathic physician, before supplementing iodine.

What else can I do to support my thyroid?

Below is a short list of lifestyle choices you can make that will support thyroid function. If you are interested in receiving more information, and recommendations for *your* particular situation, please contact Dr. Boice for an office or phone consultation [LINK HERE](#).

- Check adrenal function. As we discussed earlier, if one part of the endocrine system is struggling, other glands may be faltering, too. The Adrenocortex Stress Profile (Genova Diagnostics) uses saliva samples to assess cortisol and DHEA levels. Contact Dr. Boice if you are interested in pursuing adrenal testing. To order test and a consultation [click here](#).
- Exercise regularly, to support both thyroid and adrenal glands.
- Avoid radiation exposure. The thyroid selectively absorbs radiation in the body. Ironically, the thyroid is also highly vulnerable to radiation damage.
- Avoid chemical exposures. Many solvents and petrochemicals alter hormone function in the body. Examples of chemical exposure include off-gassing from plastics; spraying vegetable gardens and/or lawns; using bleach in the laundry; living downwind from agricultural spraying; cleaning with petroleum and bleach-based products.
- Filter your water. Chlorine and chemicals can alter hormonal activity in the body. Some of these "gender-benders," e.g. dioxin and PCB's, are also potent

- carcinogens. The other members of the halogen family (fluoride, bromine, and chlorine) can interfere with iodine absorption and metabolism in the body.
- Eat a highly nutritious diet, emphasizing organic foods as much as possible. Organic foods eliminate additional chemical exposure. In addition, organic foods contain an average of 70% more nutrients in comparison with conventionally grown foods.
 - Eat a diet that is appropriate for *your* body. Eliminate food allergens and/or intolerances. For more information, visit [LINK](#).
 - Reduce stress! Although the entire hormonal system suffers when we are under stress, the thyroid gland is particularly vulnerable to prolonged stress. Often thyroid problems surface after a period of grief, prolonged care-giving, and/or physical injury. Deep breathing and progressive relaxation are two of the fastest, most effective means for reducing stress. For a guided relaxation recording, please [click here](#)..
 - Read *Thyroid Power* by Richard L. Shames, M.D., and Karilee Halo Shames, R.N., Ph.D.