



The Carousel Network

**Chronic Neuroimmune Disease  
Information and Support for Sonoma County**  
122 Calistoga Road, #216  
Santa Rosa, CA 95409  
[www.cndinfo.net](http://www.cndinfo.net)

## Thyroid Disease

Autoimmune thyroid disease – and thyroid disorders in general – is in the top five misdiagnosed and under-diagnosed diseases in the country. The test typically ordered by physicians to detect thyroid malfunction, the TSH, only tests one aspect of the hormone in the body. For some reason, too many doctors find it easier to ignore the symptoms and complaints presented by their patients rather than order the other tests available that would give them the data they need to make an accurate diagnosis and initiate appropriate treatment.

### IN BRIEF

#### Recommended Tests

Initial Tests:

TSH (thyroid stimulating hormone), Free T4, and Free T3

Additional tests if the above are inconclusive or not congruent:

TBG (thyroid binding globulin), TRH (TSH Releasing Hormone)

#### Recommended Reading

Attached:

Overview of Thyroid Function

Excerpt from Eric Gordon, MD talk on Liver, Thyroid and Toxicity (October 2000)

Laboratory Values and Interpretations

Other Resources:

[Endocrineweb.com](http://Endocrineweb.com)

[Thyroid.about.com](http://Thyroid.about.com)

[Thyroid-info.com](http://Thyroid-info.com)

*Living Well With Hypothyroidism*, by Mary Shomon

*The Thyroid Solution: A Mind-Body Program for Beating Depression and Regaining Your*

*Emotional and Physical Health*, by Ridha Arem, MD

*The Carousel Network (TCN) offers information on the various diseases and disorders associated with chronic neuroimmune diseases, such as chronic fatigue syndrome, fibromyalgia, multiple chemical sensitivity, autoimmune thyroid disease, etc. The information is intended to help patients and caregivers make informed decisions about the patient's health, diagnostic testing, and treatment in conjunction with their health care practitioners. TCN does not diagnose patients nor recommend specific medical or palliative treatments.*

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Membership is \$20/year; make checks payable to The Carousel Network, POB 366, Fulton CA 95439-0366.**

# Thyroid Overview

Overview prepared by Melissa Kaplan

The thyroid gland, a two-lobed gland that sits in the front of the neck, is the only gland in the body that can absorb iodine. Combining the iodine with the amino acid tyrosine, it converts the iodine into two thyroid hormones: thyroxine (T4) and triiodothyronine (T3). T3 and T4 are released into the blood stream where they go to work controlling the conversion of oxygen and calories into energy (metabolism). The normal, healthy thyroid gland produces about 80% T4 and 20% T3.

The thyroid gland doesn't do this on its own. It requires stimulation from the pituitary gland's thyroid stimulating hormone (TSH). TSH stimulates the thyroid gland to produce T3 and T4. The hypothalamus's TSH releasing hormone also regulates the thyroid. In addition, the liver converts T4 into T3. Stress can affect the liver function in many ways, including disrupting the T4→T3 conversion.

Because there are actually four glands – thyroid, pituitary, hypothalamus and liver – involved in thyroid hormone production, low levels of T4 or T3 may be related to disease or dysfunction in one or more of them. If the pituitary gland is not producing enough TSH, the thyroid will not produce enough T4. If the hypothalamus isn't functioning properly (and it usually is *not* in patients who have CFS/FM), it cannot regulate the pituitary's TSH, which also will affect the T4 levels in the bloodstream.

The pituitary also regulate other glands, including the adrenals and gonads (ovaries and testicles), growth hormone production, and kidney function.

Most blood tests used to measure TSH, free T3 and Free T4 are antiquated and produce less than accurate results, contributing to the mis- and under-diagnosis of thyroid dysfunction. Fortunately, there are radioimmunoassay (RIA) techniques that make it possible to accurately measure circulating the T3 and T4 hormones in the blood. As no single laboratory test is completely accurate in diagnosing all types of thyroid disease, a combination of two or more tests are used to detect even slight abnormalities in thyroid function. Thus, it is recommended that if the TSH test comes back anywhere within the normal range, yet the patient has signs of hyperthyroidism or hypothyroidism, that the Free T3 and Free T4 RIA tests, and possibly the TBG and TRH tests, also be done to help identify which gland or glands are malfunctioning.

## BEFORE THE TESTS...

If you are currently taking prescription thyroid medication, or over-the-counter products which contain pituitary and/or thyroid glandular extracts, make sure you discuss this with your doctor before being tested. Generally, you should not take any thyroid medication (or glandulars) for 24 hours before testing. If you normally take your medication or glandulars first thing in the morning, take your last dose the day before you go in to have your blood drawn, and try to schedule your blood draw appointment as early in the morning as you can. You can then take your medication or glandulars once the blood has been drawn.

## A NOTE ABOUT DIET...

If your diet normally includes food high in iodine-binding goitrogens, you may wish to back off the foods for several weeks and see if there is any difference in your hypothyroid symptoms. Since these naturally occurring plant chemicals prevent the thyroid gland from utilizing the iodine in the rest of your diet, reducing the amount you eat, or adding an iodine supplement or foods high in iodine, may resolve minor diet-related cases of hypothyroidism. This is something else to discuss with your doctor.

### Known Goitrogens:

anthocyanin	isothiocyanate	thiocyanate
benzyl-thiocyanate	nitrile glucosinolate	thioglucoside
goitrin	phloroglucinol	vitexin
iodine	progoitrin	

### Goitrogenic Plants commonly consumed in quantity

Buckwheat	Garden cress	Linseed
Cabbage	Garden sorrel	Oats
Collard	Kale	Rye
Fenugreek	Kelp	Soybean (tofu, soymilk, etc.)
Flax	Lentil	St Johns Wort

*Excerpt*

**Livery, Thyroid and Toxicity  
Eric Gordon, MD**

**Meeting presentation, October 2000**

The TSH (thyroid stimulating hormone) has become the "gold standard" of thyroid function. When most doctors do a "thyroid test" they measure your TSH and decide, based on the test result, whether you have a thyroid problem or not. It doesn't seem to matter if you are exhibiting all of the classic signs of hypothyroidism, since the test says your thyroid is normal, then you're normal, period. The fact that your hair is falling out, you have headaches, weight gain, brittle nails, abnormal fatigue, etc., is irrelevant since the test is normal.

Some doctors may go a step further and look at your free T4 -- but not the free T3. To further complicate matters, the actual test procedures most labs use to test total T4 and T3 are essentially antiquated; there is new technology that can test the free hormone levels much more accurately.

In addition, without also testing the free T3, the doctor has no way of knowing if your body is properly converting the T4 it makes into T3. Just because the TSH level is normal doesn't mean it is present in your system in sufficient amounts, and just because your free T4 level is good doesn't mean your body is converting it like it should. "If you are exhibiting signs of low thyroid, your free T3 will be low despite your TSH being 'normal'," says Dr. Gordon. "The TSH only shows what is going on in your hypothalamus, not in your liver or elsewhere in your body."

Treating thyroid deficiency isn't always as easy as it seems when looking at disease-model medicine. In most people, their bodies convert the T4 they take into T3 just fine. For the others, "we may need to give them T4 and T3, or just T3, to see if we can fix the problem in the liver that is preventing their body from being able to do the conversion of endogenous T4 into T3."

Brian Wilson, MD, of the eponymous Wilson's Syndrome (not to be confused with Wilson's disease), says that in times of stress, our bodies make *reverse T3*. In a healthy, properly functioning body, once the stressor ends, the body stops making the reverse T3 and normal T4 conversion to T3 continues. If the body continues making reverse T3, however, symptoms of low thyroid set in, such as low body temperatures, etc.

## Key Thyroid Function Tests Laboratory Values and Interpretation

Excerpted from Mary Shomon's thyroid.about.com site

Note: These are general values/averages. Lab values can vary somewhat from lab to lab. Always check to find out what the specific normal range is for the test value at *your* lab.

Test / Name	Normal Range	Interpretation
"TSH" Test -- Thyroid Stimulating Hormone / Serum thyrotropin	0.4 to 6	Under .4 can indicate possible hyperthyroidism. Over 6 is considered indicative of hypothyroidism. <b>Note:</b> increasing numbers of doctors are finding that a TSH of around 1 - 2 is optimal for most people to feel well and avoid having hypothyroid or hyperthyroid symptoms. There is now research out that provides some scientific basis for this, saying that values above TSH of 2 may in fact represent <i>abnormal</i> levels. See <i>BMJ</i> 1997;314:1175 (19 April).
Total T4 / Serum thyroxine	4.5 to 12.5	Less than 4.5 can be indicative of an underfunctioning thyroid when TSH is also elevated. Over 12.5 can indicate hyperthyroidism. Low T4 with low TSH can sometimes indicate a pituitary problem.
Free T4 / Free Thyroxine - FT4	0.7 to 2.0	Less than 0.7 is considered indicative of possible hypothyroidism.
T3 / Serum triiodothyronine	80 to 220	Less than 80 can indicate hypothyroidism.

### Additional Comments

**Melissa Kaplan**

The full text of the *British Medical Journal* article (*BMJ* 1997;314:1175 (19 April)) can be found online at <http://www.bmj.com/cgi/content/full/314/7088/1175>.

According to the following state codes, every patient has a right to copies of his or her own medical records, including test results. In addition, upon being requested for copies of the patient's record, the health care provider has to provide the copies within 15 days, at a reasonable cost, of the request for the copies being submitted in writing. If your provider is unwilling or tardy in filling your request, you may tell them that the *California Health and Safety Code Sections 123000-123149.5* not only specifies your rights and their obligation but their failure to provide the copies as requests puts them in violation of the code and subject to a \$100 fine and is grounds for disciplinary action by their state licensing board. See the TCN *Patients Rights* handout for the full text of the state code.

For more information on thyroid, please see [www.anapsid.org/cnd/hormones/](http://www.anapsid.org/cnd/hormones/).