

Part 2 THYROID Testing 1, 2, 3

An estimated 11 million people walk around with low thyroid, half not diagnosed. As we discussed in Part 1, the goal of a health care provider should be to treat the patient, not the blood tests. You, as the patient, have responsibilities as well. Understanding the different thyroid tests, types of medications and knowing your medical history are some of the ways you can be an active member of your health team.

Thyroid Function

To understand what thyroid tests measure, you'll need a brief explanation of how the thyroid gland operates. The thyroid belongs to the endocrine system that as a whole, through hormone regulation, is responsible for growth and development within the body. Other glands include the adrenals, pineal, pituitary, thymus, pancreatic islets, parathyroid, ovaries, and testes. Most of you recognize these glands and are aware of what each does. The pituitary or master gland polices the activity of all the others, but is itself controlled by the hypothalamus. Both the pituitary and hypothalamus are situated in the brain. Although rare, sometimes a thyroid problem occurs due to a pituitary-hypothalamus malfunction.

The thyroid is located at the front of the neck, wrapping itself like a butterfly around the trachea (windpipe) just below the Adam's apple and just above the collarbone. Despite its small size (2/3 of an ounce), the thyroid is the largest endocrine gland and considered second in importance only to the pituitary since it regulates the rate of cellular metabolism.

The thyroid operates in a cycle, simplified as follows: The pituitary notes low levels of thyroid hormones in the blood and releases TSH, a thyroid stimulating hormone, which does just what it says—prompts the thyroid into making its hormones (T₄, T₃) with the help of iodine and the amino acid L-tyrosine. T₄ or *thyroxine* accounts for 80% of the hormone and is slow acting on reserve. T₃ or *tetraiodothyronine*, the fast acting portion, makes up the other 20%. Most of the active T₃ must first be converted from T₄. Once freed from T₄, T₃ enters the cell to rev up metabolism. In fact, the thyroid gland is often called the “gas pedal” of the body since it determines how fast all the other systems go. The cycle runs full circle when the thyroid releases enough T₃, T₄, which flags the pituitary to shut down production of TSH, thus allowing the thyroid to rest until hormone levels drop again, and the cycle starts over.



Thyroid Testing

Since the thyroid sends its hormone via the bloodstream, it seems logical to measure its function with blood tests. The TSH is the most ordered blood test but may not be the best. A high TSH level only means that the pituitary is responding to low level thyroid hormones by sending out more and more TSH, trying to spur the thyroid into action. A too low TSH level may indicate a hyperthyroid state, however, as thyroid hormone levels are high and TSH is not needed. T₄ is often ordered but, again, does not give enough information. More physicians are ordering a free T₃ with a TSH and T₄ since it is the one that actually enters into the cell. As you can see, thyroid testing and evaluation means looking at each juncture

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in the thyroid hormone pathway in order to measure overall thyroid function.

Besides blood tests, there are also two home tests you can do in case you suspect low thyroid function; one is the Barnes Basal Thermometer Test, the other an iodine swatch test. Although not diagnostic, if you test positive, you may be one step closer in solving your energy problem.

What Happens?

There are many theories as to why the thyroid malfunctions, from environmental factors to genetics. If you have family members with low thyroid, if you have other autoimmune disorders (diabetes, lupus, etc), you are at a higher risk. The most recognizable form of low thyroid is Hashimoto's Thyroiditis. The immune system, which is programmed to protect and defend, instead goes awry and produces antibodies that attack a part of the body, such as the joints in rheumatoid arthritis. Again, going back to the blood, obtaining an antibody test can check for autoimmune thyroiditis, which usually requires replacement therapy. Finally, in very rare case, the doctor may need to rule out a thyroid tumor.

Hyper, Hypo, Suboptimal

Although hypothyroidism is more common and symptoms differ, most people think hyper means you're more energized. The opposite is true; often the hyperthyroid person is more tired, especially if the condition is long standing, as the thyroid is more likely to become completely exhausted and shut down. Grave's Disease is one hyperthyroid disorder that follows this pattern.

There's also the gray area of suboptimal thyroid functioning. Your tests may be borderline or low normal and the doctor says you're okay. But you're still tired, have a low basal temperature, are always cold and have frequent infections. What happens then is up to you and your doctor. Some will treat with low dose thyroid replacement to see if any of the symptoms change for the better. Others will only treat based on laboratory results. If you're not happy, change doctors. A thyroid that operates suboptimally means suboptimal health.

Stay Tuned!

In the third and final segment, we'll discuss the different medications used for replacement, follow-up testing and does diet or lifestyle make a difference?

Resources

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4. Spencer, C. Thyroid testing for the new millenium. *Thyroid* 13(1) 2; 2003.
5. Supit, E et al. Interpretation of laboratory thyroid function tests for the primary care physician. *South Med J* 95(5): 481-485, 2002.
6. www.aace.com American Association of Clinical Endocrinologists.
7. www.thyroid.org. American Thyroid Association.
8. www.tsh.org Thyroid Foundation of America.

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Hypothyroid Symptoms (Underactive Thyroid)

Cold Intolerance
Constipation
Depression
Difficulty Concentrating
Dry Skin, Hair
Fatigue
Goiter
Headaches
Irregular Menses (Heavy)
Irritability
Loss of Libido
Slow Healing
Slow Pulse
Water Retention, Puffiness
Weight Gain

Hyperthyroid Symptoms (Overactive Thyroid)

Anxiety, Nervousness
Bulging Eyes
Diarrhea
Goiter
Excessive Sweating
Hair Loss
Hand Tremors
Increased Hunger
Insomnia
Irregular Menses (Short, Light)
Irritability
Rapid Heart Rate
Weight Loss

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THYROID TESTS

AT HOME

Barnes Basal Body Temperature Test

Purchase an oral Basal thermometer (the numbers are larger and easier to read). Shake it down below 95 degrees and place it by your bedside before going to sleep. Before you rise, place the thermometer under your armpit and hold there for 10 minutes. Do this 3 mornings in a row, preferably at the same time. If your temperature is lower than 97.6 consistently, you may be hypothyroid.

Iodine Swatch

Purchase a bottle of 2% tincture of iodine at the drug store. Paint an area the size of a silver dollar on your stomach or thigh. This will make a yellow stain so let it dry before dressing. Check the swatch over the next 24 hours. Iodine is needed by your thyroid to make T4, T3. The faster the swatch disappears, the more deficient you are in iodine.

AT THE LAB

Thyroid Panel

Includes a T4, T3 uptake, free thyroxine index.

TSH, Thyroid Stimulating Hormone

The higher the TSH, the less active your thyroid. Values range from 0.5-5.0, depending on the lab. Most doctors treat at 8.0 or above but others feel that anything above 2.5 indicates suboptimal function.

Free T3

Measures T3 that actually gets into the cell.

For Autoimmune Thyroiditis

Thyroid Peroxidase (Microsomal) Antibody or Thyroglobulin Antibody.

For Suspected Tumors

Thyroid Scan with or without Radioactive Iodine Uptake
Fine Needle Aspiration (Biopsy)

Note: Except for the TSH, values for the other lab tests are not given since they differ from lab to lab. For the best results, have tests done at a Reference Laboratory and use the same lab each time.

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