



January is Thyroid Awareness Month

About Your Thyroid

The thyroid gland is a small, butterfly-shaped gland located in the base of the neck just below the Adam's apple. Although relatively small, the thyroid gland plays a huge role in our body, influencing the function of many of the body's most important organs, including the heart, brain, liver, kidneys and skin. Ensuring that the thyroid gland is healthy and functioning properly is vitally important to the body's overall well-being.

How Your Thyroid Works

Excerpted from The Harvard Medical School Guide to Overcoming Thyroid Problems by Dr. Jeffrey R. Garber, published by McGraw-Hill.

Think of your thyroid as a car engine that sets the pace at which your body operates. An engine produces the required amount of energy for a car to move at a certain speed. In the same way, your thyroid gland manufactures enough thyroid hormone to prompt your cells to perform a function at a certain rate.

Just as a car can't produce energy without gas, your thyroid needs fuel to produce thyroid hormone. This fuel is iodine. Iodine comes from your diet and is found in iodized table salt, seafood, bread and milk. Your thyroid extracts this necessary ingredient from your bloodstream and uses it to make two kinds of thyroid hormone: thyroxine, also called T4 because it contains four iodine atoms, and triiodothyronine, or T3, which contains three iodine atoms. T3 is made from T4 when one atom is removed, a conversion that occurs mostly outside the thyroid in organs and tissues where T3 is used the most, such as the liver, the kidneys and the brain.

Once T4 is produced, it is stored within the thyroid's vast number of microscopic follicles. Some T3 is also produced and stored in the thyroid. When your body needs thyroid hormone, it is secreted into your bloodstream in quantities set to meet the metabolic needs of your cells. The hormone easily slips into the cells in need and attaches to special receptors located in the cells' nuclei.

Your car engine produces energy, but you tell it how fast to go by stepping on the accelerator. The thyroid also needs some direction; it gets this from your pituitary gland, which is located at the base of your brain. No larger than a pea, the pituitary gland is sometimes known as the "master gland" because it controls the functions of the thyroid and the other glands that make up the endocrine system. Your pituitary gland sends messages to your thyroid gland, telling it how much thyroid hormone to make. These messages come in the form of thyroid-stimulating hormone (TSH).

TSH levels in your bloodstream rise or fall depending on whether enough thyroid hormone is produced to meet your body's needs. Higher levels of TSH prompt the thyroid to produce more thyroid hormone. Conversely, low TSH levels signal the thyroid to slow down production.

The pituitary gland gets its information in several ways. It is able to read and respond directly to the amounts of T4 circulating in the blood, but it also responds to the hypothalamus, which is a section of the brain that releases its own hormone, thyrotropin-releasing hormone (TRH). TRH stimulates TSH production in the pituitary gland. This network of communication between the hypothalamus, the pituitary gland, and the thyroid gland is referred to as the hypothalamic-pituitary-thyroid axis (HPT axis).

When Things Go Wrong

The HPT axis is a highly efficient network of communication. Normally, the thyroid doles out just the right amount of hormone to keep your body running smoothly. TSH levels remain fairly constant, yet they respond to the slightest changes in T4 levels and vice versa. But even the best networks are subject to interference.

When outside influences such as disease, damage to the thyroid or certain medicines break down communication, your thyroid might not produce enough hormone. This would slow down all of your body's functions, a condition known as hypothyroidism or underactive thyroid. Your thyroid could also produce too much hormone sending your systems

into overdrive, a condition known as hyperthyroidism or overactive thyroid. These two conditions are most often features of an underlying thyroid disease.

When considering thyroid disease, doctors ask two main questions: First, is the thyroid gland inappropriately producing an abnormal amount of thyroid hormone? And second, is there a structural change in the thyroid, such as a lump—known as a nodule—or an enlargement—known as a goiter? Though one of these characteristics does not necessarily imply that the other is present, many thyroid disorders display both.

Frequently Asked Questions

How common is thyroid disease?

Thyroid disease is more common than diabetes or heart disease. Thyroid disease is a fact of life for as many as 30 million Americans – and more than half of those people remain undiagnosed. Women are five times more likely than men to suffer from hypothyroidism (when the gland is not producing enough thyroid hormone). Aging is just one risk factor for hypothyroidism.

How important is my thyroid in my overall well-being?

The thyroid gland produces thyroid hormone, which controls virtually every cell, tissue and organ in the body. If your thyroid is not functioning properly, it can produce too much thyroid hormone, which causes the body's systems to speed up (hyperthyroidism); or it can create too little thyroid hormone, which causes the body's systems to slow down (hypothyroidism).

Untreated thyroid disease may lead to elevated cholesterol levels and subsequent heart disease, as well as infertility and osteoporosis. Research also shows that there is a strong genetic link between thyroid disease and other autoimmune diseases, including types of diabetes, arthritis and anemia.

Simply put, if your thyroid gland isn't working properly, neither are you.

How do you know if you have a thyroid problem?

First, you must understand how to recognize the symptoms and risk factors of thyroid disease. Since many symptoms may be hidden or mimic other diseases and conditions, the best way to know for sure is to ask your doctor for a TSH (thyroid-stimulating hormone) test, a simple blood test to verify your thyroid gland's condition. Also, take a minute and perform a self neck check. And because thyroid disease often runs in families, examinations of your family members and a review of their medical histories may reveal other individuals with thyroid problems.

Source: The American Association of Clinical Endocrinologists and the American College of Endocrinology, <http://www.thyroidawareness.com/>

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