

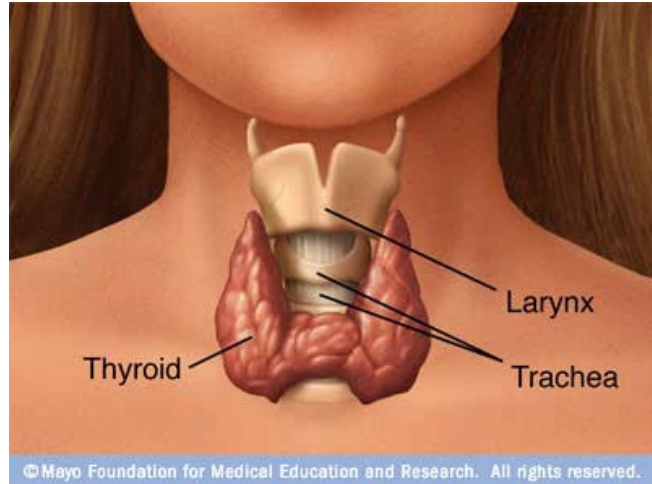
WHAT DO YOU KNOW ABOUT YOUR THYROID?

by John Appleton

Just below your 'Adams apple' (larynx) is a small gland weighing less than 30 grams. When viewed from the front it looks somewhat like a small bowtie.

The thyroid gland is a key player in our endocrine system which is an information signaling system much like the nervous system. Whereas the nervous system uses nerves to 'transmit' information, the endocrine system uses glands which release chemical messengers called hormones into the blood stream.

Hormones are important regulators of many functions in the body.



Our thyroid could be likened to the furnace in a central heating system because it has the ability to control the metabolism of every cell in the body. The thyroid is aided in its function by two other glands – the Pituitary gland (which is the size of a peanut) located in the base of the brain and the Hypothalamus (which is the size of an almond) located just above the brain stem. In the central heating system, the pituitary would be the thermostat and the hypothalamus would be the person setting the thermostat.

Let's see what they do and how they interact. The thyroid gland works by taking in iodine (deficient in New Zealand soils) and converts it into hormonal messengers known as thyroxine (T4) and triiodothyronine (T3). Thyroid cells are the only cells in the body which can absorb iodine. Thyroid cells combine an amino acid called tyrosine to make T4 and T3 which is released into the body. Every cell in the body depends on the hormones released by the thyroid. In a happily functioning thyroid, T4 production is approx 80% and T3 20%, BUT T3 is about four times as active as T4.

If the level of circulating T4 and T3 drops too low our pituitary (thermostat) releases a thyroid stimulating hormone known as TSH which tells the thyroid to produce more hormones. When the thyroid responds the pituitary switches off production of TSH and waits until the next signal. The controller of this process, the hypothalamus determines at what level the thermostat (pituitary) is set by releasing a hormone known as TRH releasing hormone (TRH). The pituitary then knows how to react to a given situation.

If only this happened as it should day in and day out for the duration of our lives. Regrettably it doesn't and thyroid problems are now so widespread that they affect hundreds of millions of people worldwide. According to the Thyroid Foundation in the United States more than half of thyroid conditions remain undiagnosed.

Women are affected more than men and it is estimated that one woman in eight will develop a thyroid problem in her life and women are five to eight times more likely than men to have thyroid dysfunction.

There are two major categories of thyroid dysfunction, one which involves an over-active thyroid gland (hyperthyroidism) and the other an under-active thyroid gland (hypothyroidism). Both hyperthyroidism and hypothyroidism can have a significant impact on our health and you should work closely with your doctor if you suspect you have either of these conditions.

Hypothyroidism:

When too little TH is released, the body's metabolic rate decreases, and the body slows down. Hypothyroidism often goes undiagnosed because its symptoms are often mistaken for or attributed to other conditions. Symptoms include: fatigue, depression, low body temperature, weight gain, dry or itchy skin thin, dry hair/hair loss, slow heart rate, constipation, poor memory hoarseness/husky voice, high cholesterol, goiter (enlarged thyroid gland).

Hypothyroidism can occur spontaneously, develop during or after pregnancy or after treatment for hyperthyroidism. You can be born with it or it can be caused by Hashimoto's thyroiditis an autoimmune disease named after a Japanese physician (born 1881) who first described it. In this case, the immune system produces antibodies to attack the thyroid gland as if it were a foreign substance that needed to be destroyed. The resulting damage leads to reduced production of thyroid hormone.

Hyperthyroidism:

When too much TH is released, the body's metabolic rate increases, and your metabolism speeds up. Symptoms of hyperthyroidism include: palpitations, heat intolerance, nervousness, insomnia, breathlessness, increased bowel movements, fast heart rate, weight loss, muscle weakness, warm moist skin.

Hyperthyroidism can be caused by nodules composed of thyroid cells that produce thyroid hormone without regard to the body's need. It can also develop during or after pregnancy and may be caused by Graves' disease. Symptoms of hyperthyroidism may also result from over treatment of hypothyroidism with synthetic thyroid hormone or from thyroiditis, an inflammation of the thyroid gland, which leads to an overproduction of thyroid hormone.

Graves' disease, another autoimmune condition, is the leading cause of hyperthyroidism, accounting for 85 percent of hyperthyroidism cases. Graves' disease differs from Hashimoto's thyroiditis in that the antibodies turn the thyroid on, causing the thyroid gland to enlarge and overproduce TH. Other antibodies may also attack eye muscle tissue and the skin on the front of the lower leg. Graves' disease was named after Robert Graves, an Irish physician (born 1797) who first discussed this form of hyperthyroidism.

Hypothyroidism is the most common reason for a visit to the doctor when thyroid issues are suspected. Most often blood tests are used to diagnose the problem and one of the tests might be for TSH which measures the amount of thyroid stimulating hormone. Other tests might be total T4 (total thyroxine) Free T4 or total or free T3.

Another and very reliable way that you can assess your thyroid's performance is to do a simple test at home using a thermometer (not a digital). This is known as the Barnes Basal Temperature Test pioneered by Dr Broda Barnes MD PhD. Before going to bed shake down the thermometer and leave it on the bedside table. On waking and prior to getting out of bed. place the thermometer under your arm for ten minutes. Note the temperature and do this for three days.

For women the second and third days of your menstrual cycle are when the most accurate/reliable temperature can be found. If you find that your temperature is consistently less than 37 degrees this could indicate hypothyroidism. Take the results with you when you visit your doctor.

There are many reasons why our thyroids malfunction. A couple that I would like to comment on are: Mercury from dental amalgams and other sources, blocks an enzyme called thyroid peroxidase which converts T4 to T3. This is potentially a very significant issue. Fluoride and chlorine found in our water supply are major endocrine disrupters. Both fluorine and chlorine belong to a group of elements known as halogens and are chemically related. Iodine is a halogen too but fluorine is much more active. Both fluorine and chlorine block iodine receptors in the thyroid gland. Interestingly up until the 1950's European doctors used fluoride to reduce the activity of the thyroid gland for patients with an over-active thyroid. The dose of fluoride found to achieve this was approx 2.3-4.5 mgs per day. The daily dose of fluoride for people living with fluoride in the water supply has been assessed at up to 6.6 mgs per day. In the U.S., Synthroid a synthetic hormone medication used to treat hypothyroidism was in 2000, the fourth most prescribed drug. Clearly there are some huge issues that need to be addressed and while treating the symptoms of the condition might make a lot of money for pharmaceutical companies, we should be looking to the environment for answers.

For anyone interested in reading more about thyroid health – the best book on the subject is "Solved: The Riddle of Illness" by Stephen Langer MD.

"Health begins and ends with the proper balance of the endocrine system"
Broda O. Barnes, M.D., Ph.D.

More information – John Appleton - (09-489-9362 appletonassoc@xtra.co.nz)