The thyroid gland is a small gland that lies in the neck, just below the Adam’s apple. Though it is small, measuring approximately 2 inches across, it affects many bodily functions, such as the heart rate, metabolism, fertility, digestion, growth, and skin maintenance.

The thyroid gland is comprised of two halves, or lobes. These lobes are connected in the middle; this area is called the isthmus. This gives the thyroid the shape of a butterfly or a bowtie.

The thyroid gland secretes hormones. These thyroid hormones serve many functions. According to Merck Manual, these hormones “…control the speed at which the body’s chemical functions proceed (metabolic rate). Thyroid hormones influence the metabolic rate in two ways: By stimulating almost every tissue in the body to produce proteins and by increasing the amount of oxygen that cells use.”

The thyroid produces two thyroid hormones:
• T4 (thyroxine or tetraiodothyronine)
• T3 (triiodothyronine)

The function of these hormones is complex; for the thyroid to make these hormones, the body requires iodine. Typically, we take in an adequate amount of iodine by consuming water and food. Thyroid stimulating hormone, or TSH, is produced by the pituitary gland. This hormone stimulates the thyroid gland, causing it to make T4 and T3.

Hyperthyroidism

Hyperthyroidism occurs due to an overproduction of thyroxine (T4). This may also be called an overactive thyroid. Hyperthyroidism greatly effects the metabolism, causing it to become accelerated – it likely causes unintentional weight loss and an irregular, rapid heartbeat. Other symptoms of hyperthyroidism include:
• Heart palpitations
• Increased appetite
• Anxiety
• Tremors
• Sweating
• Menstrual changes
• Increased sensitivity to heat
• More frequent bowel movements
• Brittle hair
• Skin thinning
• Fatigue
• Insomnia
• Graves’ ophthalmopathy, which is an abnormal protrusion of the eyes. This occurs because the tissues and the muscles behind the eyes begin to swell.

Causes of hyperthyroidism can be caused by Graves’ disease, Plummer’s disease, or thyroiditis, as well as various other causes.

There are various treatment options available for hyperthyroidism:
• **Radioactive iodine.** An oral treatment, radioactive iodine is absorbed by the thyroid gland. This causes the thyroid to shrink within a few months. Unfortunately, the thyroid gland may shrink too much and become underactive, requiring treatment for hypothyroidism.
• **Anti-thyroid medications.** These medications cause the thyroid to produce less thyroid hormones. Examples include methimazole (Tapazole) and propylthiouracil. Unfortunately, these treatments can be harmful to the liver, especially propylthiouracil. Treatment can take up to a year, and relapses can occur.
• **Thyroidectomy.** For those who can’t tolerate oral medications, a partial or complete thyroidectomy is an option. There are risks associated with a thyroidectomy, such as damage to the vocal cords and parathyroid gland. In addition, treatment will be required for hypothyroidism.

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**Thyroid Conditions**

**What is the Thyroid Gland?**

By Krystina Ostermeyer RN, BSN, CDE
Hypothyroidism

Hypothyroidism occurs when the thyroid gland produces too little thyroid hormone. It is also called underactive thyroid. The opposite of hyperthyroidism, those with hypothyroidism suffer from a metabolism that is slowed. Common symptoms include:

• Weight gain or an inability to lose weight
• Fatigue
• Dry, coarse hair
• Abnormal menstruation
• Reduced libido
• Hair loss
• Cold intolerance
• Muscle aches
• Depression
• Constipation
• Irritability
• Memory loss

Common causes of hypothyroidism include Hashimoto's thyroiditis, also known as autoimmune thyroiditis, and a surgically removed thyroid gland for medical reasons. Occasionally a thyroid gland is simply “lazy” though this is less common than other reasons for hypothyroidism.

Treatment for hypothyroidism requires a medication such as levothyroxine (Synthroid), which helps to replace thyroid hormones that are “missing” from the body.

Thyroid Nodule

The thyroid gland can develop nodules, just as other organs can. A thyroid nodule is a collection of excess cells that have formed; this creates a lump on the thyroid gland. These nodules may be solid or fluid-filled.

There is no clear-cut cause of thyroid nodules, but they appear to be linked to thyroiditis, which is chronic inflammation of the thyroid gland, iodine deficiency, thyroid adenoma, thyroid cysts, and thyroid cancer.

Typically, thyroid nodules are non-cancerous. Treatment is dependent on the type of nodule, as well as the size. A fine-needle biopsy will likely be performed to determine if the nodule is cancerous. A non-cancerous nodule may be observed for growth.

Treatment may be required if thyroid hormones become elevated or if the nodule becomes too large. If the nodule is cancerous, it will be removed.

Thyroid Storm

Although rare, a thyroid storm can be a life-threatening event. Thyroid storm is caused by excess thyroid hormones in the body, thus it can occur in anyone with hyperthyroidism.

Thyroid storm is most likely to occur in someone who has untreated hyperthyroidism, someone who does not take their medication as recommended, or during situations that place excess stress on the body, such as a traumatic event – severe infection, trauma, or surgery.

Symptoms of a thyroid storm include:

• Elevated fever, often in excess of 105.8 degrees Fahrenheit
• Goiter or thyroid eye disease
• Heart failure
• Dehydration
• Jaundice
• Rapid heart rate
• Irregular heart rhythm
• Diarrhea
• Weakness
• Confusion
• Coma

Treatment for thyroid storm is multifaceted as a thyroid storm affects multiple body systems. It is a medical emergency, thus the person who is suffering will require treatment as a hospital inpatient, likely in an intensive care unit. Treatment to reduce thyroid hormones is required, but supportive treatment is also required; for example, beta blockers may be administered to reduce the heart rate.

Resources

• What are thyroid nodules? (n.d.). Retrieved June 17, 2019, from https://www.webmd.com/a-to-z-guides/what-are-thyroid-nodules1