



Thyroid Gland

Your Thyroid

- A butterfly-shaped organ found at the front of the neck under your voice box. The two side lobes lie against and around your windpipe (*trachea*), connecting at the front by a narrow strip of tissue.
- Your thyroid weighs between 20-60 grams and is surrounded by two fibrous capsules.
 - The outer capsule is connected to the voice box muscles, important vessels, and nerves.
 - Loose connective tissue between inner & outer capsules allow your thyroid to move and change positions when you swallow.
 - Thyroid tissue consists of individual lobules enclosed in thin layers of connective tissue. Lobules contain many small vesicles (*sacs*) called follicles where thyroid hormones are stored in the form of small droplets.

Your Thyroid's Function

- Vital hormone gland playing a major role in metabolism, growth & development of your body.
- Regulates many body functions by releasing a steady amount of thyroid hormones into your bloodstream.
- Produces extra hormones for energy in certain situations such as during pregnancy, growth periods, and when you are cold.

Hormones Produced By Your Thyroid

- Triiodothyronine-T3
- Tetraiodothyronine, also called thyroxine-T4
- Calcitonin
 - T1
 - T2

Your Thyroid Hormones

- T3 & T4 are the only thyroid hormones made in the follicular epithelial cells of your thyroid.
- Iodine is one of the main building blocks of both hormones which must come from your diet. The iodine is absorbed through your bowel and carried to your thyroid to make more thyroid hormones.
- The amount of thyroid hormones your body needs changes. Your thyroid relies on your pituitary gland to determine whether to release more or less hormones into your bloodstream through the TSH signaling molecule.
- Certain amounts of thyroid hormones attach to transport proteins in your blood in order for T3 & T4 to be released from the proteins to do their job.
- Calcitonin is made by C-cells involved in calcium and bone metabolism.

T3 and T4 increase your basal metabolic rate causing all the cells in your body to work harder, because of this the cells need more energy. This results in the following effects:

1. Body temperature rises
2. Faster pulse and stronger heartbeat
3. Food is used up more quickly because energy stored in the liver and muscles is broken down

4. The brain matures (in children)
5. Growth is promoted (in children)
6. Activation of the nervous system leads to improved concentration and faster reflexes

Hormone Imbalances

Overactive Thyroid (*Hyperthyroidism*)

- Occurs when thyroid gland produces too many hormones.

Under-active Thyroid (*Hypothyroidism*)

- Occurs where the gland doesn't produce enough hormones.

When You Have A Thyroid Imbalance

- The thyroid gland may grow in size.
- The whole thyroid gland becomes enlarged (*diffuse goiter*).
- Individual lumps called nodules can grow in the gland (*nodular goiter*).
- A special examination called a thyroid scintigraphy is used to determine whether these nodules are producing abnormal amounts of hormones.
 - *"Hot" Nodules*-Nodules producing more hormones than the rest of the thyroid tissue.
 - *"Cold" Nodules*-Nodules producing less hormones than the rest of the thyroid tissue.
- Most enlarged thyroids and/or nodules are not caused by anything serious and rarely cancerous.
- It is important to see your healthcare provider if you notice any changes in your thyroid gland or a change in your voice.
 - Your practitioner may make recommendations to balance your thyroid hormones.