

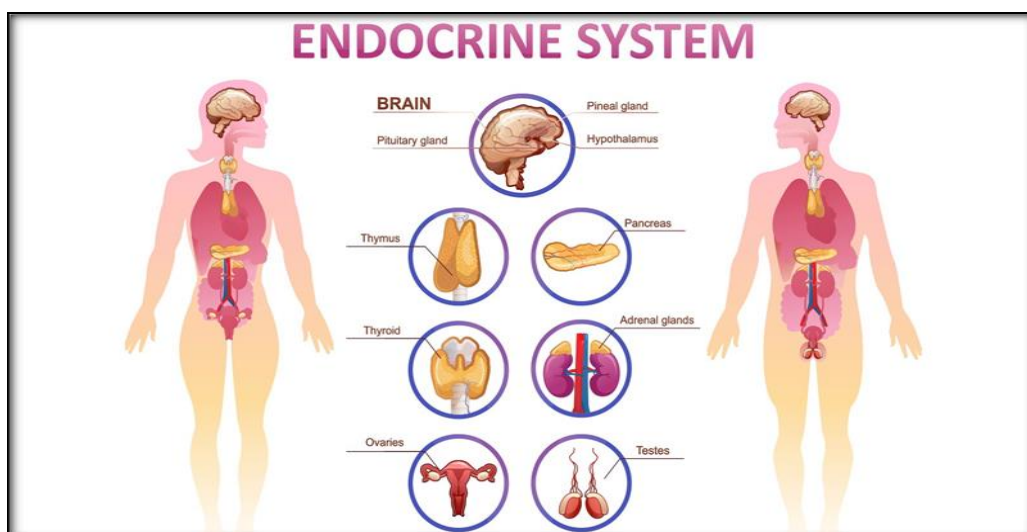
## THE ENDOCRINE SYSTEM

The endocrine system is a control system of ductless glands that secrete hormones the endocrine system controls body processes by chemical substances called hormones.

**HORMONES:** are potent chemical signaling substances (messengers) that are produced by secretory cells and released into the circulatory system and reach to different cells in the body but it acts at certain cells or tissues called target area by binding to certain receptors in the target area hormones divided in to two types: peptides hormones and steroid hormones

Hormones affect nearly every process in your body, including:

- Metabolism (the way you break down food and get energy from nutrients).
- Growth and development.
- Emotions and mood.
- Fertility and sexual function.
- Sleep.
- Blood pressure.



## Type of the glands

### 1. Exocrine glands:

are glands that secrete their product in to ducts which deliver the secretion in to cavities, lumen of an organ or to the outer of the body as the sweat glands.

### 2. Endocrine glands:

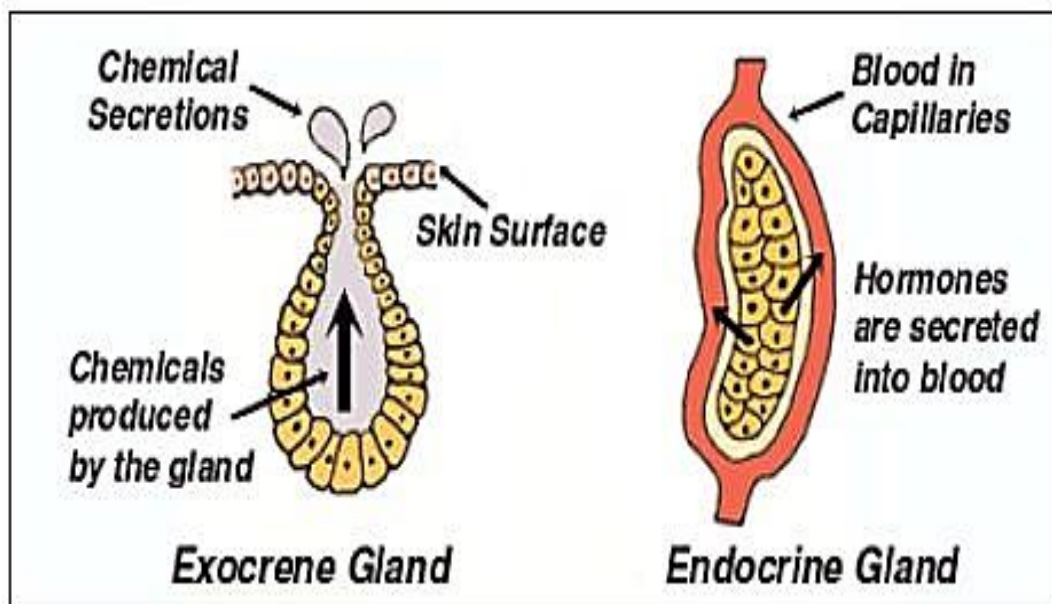
secrete their products into the blood capillary to be carried away by the blood as the pituitary gland.

Sometimes glands produce too much or not enough of a hormone.

This imbalance can cause health problems, such as weight gain, high blood pressure and changes in sleep, mood and behavior.

Many things can affect how your body creates and releases hormones.

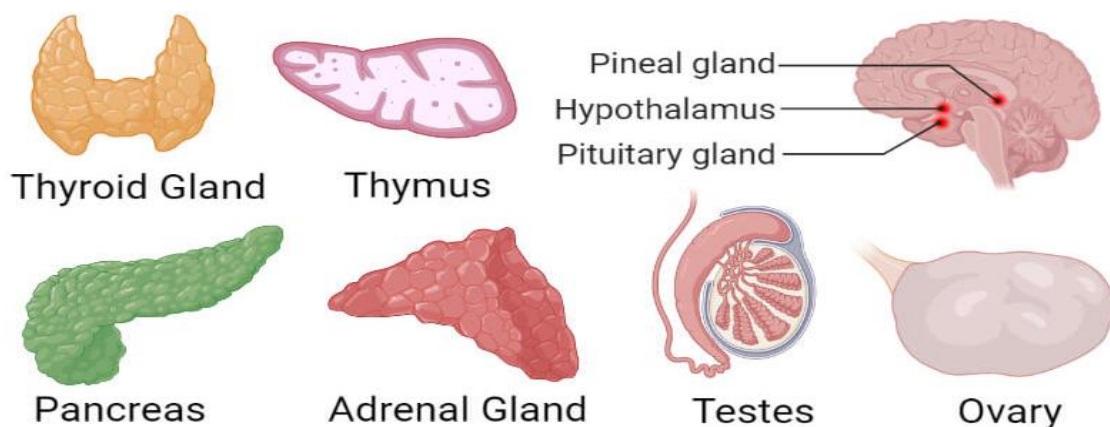
Illness, stress and certain medications can cause a hormone imbalance.





The main glands in your endocrine system include:

- **Adrenals:** Two glands that sit on top of each kidney and make cortisol, sex hormones, and the “fight or flight” hormone adrenaline.
- **Hypothalamus:** A portion of the brain that links the endocrine and nervous systems and tells the pituitary gland when to make hormones.
- **Ovaries (in women):** Organs that make the hormones estrogen and progesterone important for development, pregnancy support, and menstrual cycle regulation.
- **Pituitary gland:** The “master gland” that tells other glands what to do after getting information from your brain.
- **Pineal gland:** A gland that creates melatonin, which you need to regulate sleep.
- **Parathyroid:** Four tiny glands that sit behind your thyroid, make the peptide hormone PTH, control calcium and phosphorus levels, and play a role in bone health.
- **Pancreas:** An organ that makes digestive enzymes to break down food as well as the hormones glucagon and insulin to regulate blood sugar.
- **Thymus:** A gland that creates white blood cells to fight infection and is most active during childhood and early teen years.
- **Thyroid gland:** A gland that creates thyroid hormones to regulate your metabolism and many other crucial functions.
- **Testes (in men):** Organs that make testosterone, control development, and help body hair growth during puberty.





## How can I keep my endocrine system healthy?

- Your endocrine system needs the same things the rest of your body needs to stay healthy.  
You should exercise, eat right and see your healthcare provider regularly.
- If you have a family history of diabetes, thyroid disorders or PCOS, talk to your provider. Managing these conditions can help you avoid a hormone imbalance that can lead to health problems.

## Some disorders of the endocrine system are:

- **Diabetes:** This endocrine disorder affects the way your body uses the energy from the food you eat.  
Diabetes develops when the pancreas doesn't make enough of a hormone called insulin, or insulin doesn't work as it should.
- **Thyroid disorders:** Several conditions can affect the function of the thyroid gland.  
Hypothyroidism happens when the thyroid doesn't produce enough hormones. Hyperthyroidism occurs when it creates too many hormones.
- **Hypogonadism (low testosterone):** In men, hypogonadism can cause erectile dysfunction.  
It can also cause memory and concentration problems, changes in muscle strength and low sex drive.  
It happens when the testes do not produce enough of the sex hormone testosterone.
- **Polycystic ovary syndrome (PCOS):** A hormonal imbalance causes women with PCOS to have irregular periods, abnormal hair growth, excess acne and weight gain. It can lead to diabetes, increased risk of metabolic syndrome and infertility.



- **Osteoporosis:** When a woman's ovaries don't produce enough estrogen, bones become brittle and weak. Although it is more common in women, men sometimes have osteoporosis when testosterone levels get too low. People with an overactive parathyroid gland (hyperparathyroidism) may also have weak bones.

Chemicals called endocrine disrupters can also affect the endocrine system. These chemicals appear everywhere — in pesticides, plastics, cosmetics and even our food and water.

Endocrine disrupters cause a wide range of problems throughout the body by changing how hormones send messages.