

Acquired Hypothyroidism

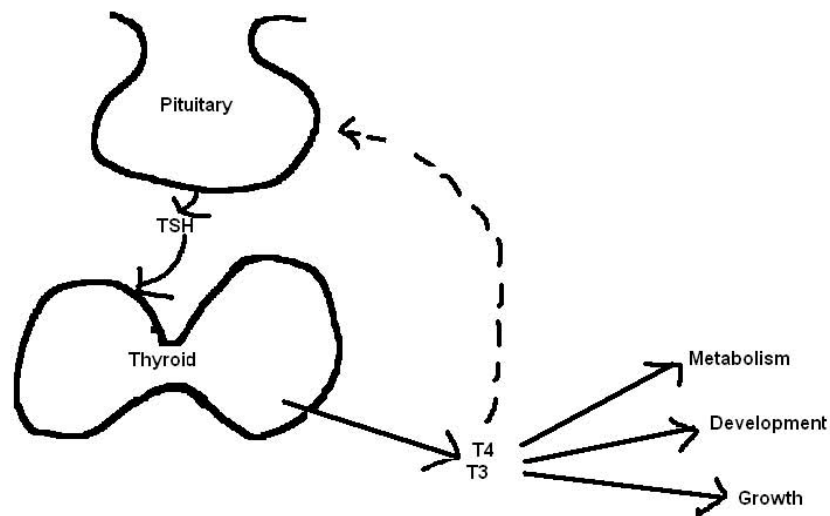
What is acquired hypothyroidism?

Hypothyroidism results from the inability of the body to produce **thyroid hormones**. These hormones act as chemical messengers to control growth and development of the body and brain, influencing energy use (metabolism), and direct the function of the heart, liver, kidneys and skin. "**Acquired**" means that it occurred sometimes after birth, when the thyroid gland was fully developed, and "**Hypothyroidism**" means low thyroid hormone levels.

What are thyroid hormones?

Thyroid hormones are produced by the **thyroid gland**. It is shaped like a bow tie or a butterfly and is usually located in the front of the neck, just below the "Adam's apple". The thyroid gland makes two hormones - **thyroxine (T4)** and **triiodothyronine (T3)**. The thyroid hormones are important for several reasons: 1) they affect body metabolism, or the way the body uses food for heat production and energy; 2) they are necessary for proper growth in children; 3) they are required for the proper development of the brain during infancy; and 4) they affect the heart's performance.

The thyroid gland produces these hormones under the direction and regulation of another hormone, **thyroid stimulating hormone (TSH)**. The TSH is made by a gland in the brain called the **pituitary**. When the pituitary gland thinks the body needs more thyroid hormone, it releases TSH, which stimulates the thyroid gland to make the thyroid hormone. When the pituitary gland thinks the body has plenty of thyroid hormones, it slows down the release of TSH, and this then reduces the amount of thyroid hormones made by the thyroid gland. If this sounds complicated, think of the thyroid gland as the furnace in your house, and the pituitary gland as the thermostat that senses the room temperature and controls the heat production of your furnace.



What causes acquired hypothyroidism?

Typically, hypothyroidism is caused by an abnormality in the immune system, whereby antibodies fail to recognize the thyroid cells as part of your self. Therefore, the immune system produces antibodies that are directed against one's own thyroid cell. This results in a chronic inflammation within the gland, causing **enlargement of the gland**. It also becomes firmer than normal and typically feels quite lumpy on careful examination. The chronic inflammation and antibodies gradually destroy the thyroid cells, resulting in hypothyroidism. In some cases, the chronic inflammation progresses to fibrosis and scarring, eventually resulting in the gland shrinking down and "melting away". Usually, an abnormality of the **immune system** that results in **damage or destruction of the thyroid gland** causes acquired hypothyroidism. This process can cause **loss of thyroid tissue** or **enlargement of the thyroid gland**. The massive enlargement of the thyroid gland is sometimes referred to as a **goiter**. Other causes of hypothyroidism include surgical removal of the gland or radiation to the gland. Occasionally, the disease does not involve the thyroid gland itself, but is located within the pituitary gland or the area of the brain just above it, called the hypothalamus. Hypothalamic or pituitary disease, such as a cyst, a growth,

surgery to that area of the brain, infection, increased pressure within the chambers (ventricles) of the brain, radiation or trauma to the pituitary gland can cause hypothyroidism.

What are some of the possible effects of hypothyroidism?

Signs and symptoms of hypothyroidism may include decreased growth rate, weight gain, decreased activity energy, low body temperature, dry skin, cold intolerance, constipation, tiredness, puffiness of the face, mild anemia, slow speech and delayed sexual maturation. Occasionally premature sexual maturation may occur.

How is acquired hypothyroidism diagnosed?

Hypothyroidism usually is diagnosed by learning about the **child's symptoms** and by giving the child a thorough **physical examination**. **Blood test** may include thyroid hormones (T3 and T4), TSH, thyroid antibodies, and thyroid binding globulin (TBG).

If the blood tests are abnormal the doctor may order special **X-rays**. An **ultrasound** of the thyroid gland may also be obtained. **Radioactive Iodine Scan (RAI)** uses dye and **X-rays** to determine the presence and function of the thyroid gland. A **bone age X-ray** of the left hand and wrist may be done to see how your child's bones are growing.

How is acquired hypothyroidism treated?

The treatment of hypothyroidism is simple and effective. Your child will be given medicine, called **L-thyroxine** (also known as **levothyroxine**, **Levoxyl**, **Synthroid**), in the form of a tablet to replace the thyroid hormone. L-thyroxine is the same as T4. All of these preparations are human L-thyroxine. They are immediately converted by enzymes in the body to T3, providing just the right mix of T4 and T3 to regulate metabolism. We do not prescribe animal thyroid hormone extracts, as they do not provide the body with consistent, reliable thyroid hormone levels to mimic the natural secretion of thyroid hormones. It is very important that the medication be taken **every day**, preferably at the same time. A pillbox may be helpful to keep track of the pills that are given. Despite what the pharmacist may tell you to the contrary, you are encouraged to make up any missed doses by taking extra pills all at once. Do not take it at the same time as any iron or calcium supplements, or any soy products. Be sure you have the prescription filled before you are completely out of medication to avoid missing doses.

Always keep your doctor informed of your child's status.

You may see the following signs if your child is getting **too much thyroid medicine**: poor sleeping, tremors (shaking), weight loss, irritability, palpitations, diarrhea, or excessive hunger. If your child is **not getting enough thyroid medication** you may see: sleeping for long periods of time, constipation, dry skin, excessive weight gain, or decreased energy/activity. If you notice these symptoms, **contact your doctor**. The dose may need to be adjusted. **Never adjust the dose of thyroid medication yourself**; a blood test will be necessary first.

When should the doctor see my child?

Your child needs to be seen at our office for exams, growth checks and blood tests to make sure the correct amount of thyroid medication is being taken. Depending upon your child's age, and stability of thyroid hormone levels, we usually see children with acquired hypothyroidism **every 3 - 12 months**. Remember that you will also need to continue to follow up with your child's primary care physician for routine medical care.

What is the future for my child?

With proper treatment and follow-up your child has a **very good prognosis** for normal development of all body systems. It is important to follow your doctor's orders for giving thyroid replacement medication.