

Acquired Hypothyroidism in Children: A Guide for Families

What does hypothyroidism mean?

Hypothyroidism refers to an underactive thyroid gland that does not produce enough of the active hormones T3 and T4. This condition can be present at birth or can be acquired any time during childhood or adulthood. Hypothyroidism is very common and occurs in about 1 in 1250 children. In most cases, the condition is permanent and will require treatment for life. This discussion will focus on the causes of hypothyroidism in children arising after birth.

The thyroid gland is a butterfly-shaped organ located in the middle of the neck. It is responsible for producing the thyroid hormones T3 and T4. This production is controlled by the pituitary gland in the brain via thyroid stimulating hormone (called TSH). T3 and T4 perform many important actions during childhood, including the maintenance of normal growth and bone development. Thyroid hormone is also important in the regulation of metabolism.

What causes acquired hypothyroidism?

The causes of hypothyroidism can arise from the gland itself or from the pituitary. The thyroid can be damaged by direct antibody attack (autoimmunity), radiation, or surgery. The pituitary gland can be damaged following a severe brain injury or secondary to radiation. Certain medications and substances can interfere with thyroid hormone production. For example, too much or too little iodine in the diet can lead to hypothyroidism. Overall, the most common cause of hypothyroidism in children and teens is direct attack of the thyroid gland from the immune system. This disease is known as autoimmune or Hashimoto's thyroiditis.

Certain children are at greater risk of hypothyroidism; this includes children with congenital syndromes, especially Down syndrome, children with type 1 diabetes, and children who have received radiation for cancer treatment.

What are the signs and symptoms of hypothyroidism?

The signs and symptoms of hypothyroidism include:

- Tiredness
- Modest weight gain (no more than 5-10 lb)
- Feeling cold
- Dry skin
- Hair loss
- Constipation
- Poor growth

Often, your doctor will also be able to palpate an enlarged thyroid gland in the neck. This is called a goiter.

How is hypothyroidism diagnosed?

Simple blood tests are used to diagnose hypothyroidism. These include the measurement of hormones produced by the thyroid gland and pituitary. Free T4 (which is more accurate than just the total T4) and TSH are measured. The tests are inexpensive and widely available at your regular doctor's office. Hypothyroidism is diagnosed when the stimulating hormone from the pituitary (TSH) is high and the free T4 produced from the thyroid is low. If there is not enough TSH, then both levels will be low. Normal ranges for free T4 and TSH are somewhat different in children than adults, so the diagnosis should be made in consultation with a pediatric endocrinologist.

What is the treatment for hypothyroidism?

Hypothyroidism is treated using a synthetic thyroid hormone called Levothyroxine. This is a once-daily pill that is usually given for life (for further information on thyroid hormone, see handout on Thyroid Hormone Administration). There are very few side effects, and when they do occur, it is usually the result of significant overtreatment. Your doctor will prescribe the medication and then perform repeat blood testing. We wait at least 6-8 weeks, because it takes a long time for the body to adjust to the new hormone levels. If the medication is working, blood testing will show normal levels of TSH and free T4.

You should contact your doctor if your child experiences difficulty falling asleep or restless sleep or difficulty concentrating in school. These may be signs that your current thyroid hormone dose may be too high and you are being over treated.

There is no cure for hypothyroidism; however, hormone replacement is safe and effective. With once-daily medication and close follow-up with your pediatric endocrinologist, your child can live a normal, healthy life.

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