

### How is hypothyroidism treated?

It is easily treated with a pill that is taken every day, for life. A synthetic form of thyroid hormone called thyroxin is given. It is taken once a day, ideally at about the same time of day.

Regular blood tests will tell your doctor whether or not the dose of thyroxin is working for your child. Blood tests are usually done 4 to 6 weeks after each dose change but no less than once per year. As your child grows, the dose of thyroxin may need to be increased.

If your child throws up within a 30 minutes of taking thyroxin, give the entire dose again. If your child vomits more than 30 minutes after the dose, the dose is considered absorbed and does not need to be give again.

If your child misses a dose of thyroxin, you can give it later that same day. If the dose can't be made up later the same day, then just give the usual dose as scheduled the next day. **Do not give double the dose if a dose is missed.**

Most children who have stopped growing or developing due to hypothyroidism will begin growing and developing once they start taking thyroxin. Most will grow quickly and catch up to where they would have been had they not become hypothyroid. A few children who have been hypothyroid for a long time before starting thyroxin may not have this catch up growth.

### What are the signs that the thyroid medicine dose is too high?

Signs include:

- eating more but losing weight
- shaky hands
- nervous, irritable
- trouble sleeping/restless
- fast heartbeat
- diarrhea
- warm to touch, maybe even sweaty

### What are the signs the thyroid medicine dose is too low?

Signs include:

- little or no energy
- sleeping more
- doesn't tolerate the cold
- dry skin and coarse hair
- constipation
- weight gain

If your child has any or all of these symptoms of too much or too little thyroxin, the dose may need to be changed. Call the endocrine clinic nurse or your doctor's office. A blood test can be done to check if the dose of thyroxin is correct. There are no long-term side effects of thyroxin as long as your child is on the correct dose.

### Can my child take a natural remedy instead of thyroxin to treat hypothyroidism?

Natural remedies are available that are said to treat hypothyroidism. They may be made from seaweed or some other compound. These remedies usually contain iodine, which is helpful for people in underdeveloped countries who have hypothyroidism due to iodine deficiency. The strength of these remedies can vary a lot. This means that people who take them may have periods of both high and low energy. They are **not** usually helpful in this part of the world, where hypothyroidism is often due to causes other than iodine deficiency.

### How often should my child see the doctor?

Your child should have a check-up and blood tests at least once a year. Your doctor will tell you if your child should be seen more often. A family doctor, pediatrician, or endocrine doctor may see your child.

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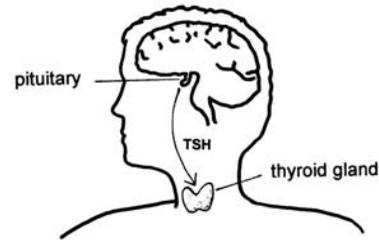
# Acquired Hypothyroidism in Children

## What is hypothyroidism?

Hypothyroidism happens when the thyroid gland fails to make or release enough thyroid hormone. It is almost always permanent.

The thyroid gland is found in the neck. It produces two hormones, thyroxin (T4) and triiodothyronine (T3). The thyroid hormones control growth and development of the body and brain and many chemical processes in the body.

The thyroid gland makes T3 and T4 from iodine. Our body gets the iodine it needs from table salt, which has iodine added.



## What causes hypothyroidism?

Hypothyroidism can have many different causes:

### 1. Autoimmune (Hashimoto's) thyroiditis

This is the most common cause of hypothyroidism in parts of the world like North America, where iodine shortage is not a problem. It can happen during infancy or childhood. It is more common in girls than boys. It is also more common in children with other autoimmune diseases such as type I diabetes.

The body attacks its own thyroid gland with thyroid antibodies and slowly destroys it. As the gland is being destroyed, it may have go back and forth between being overactive (hyperthyroid) and underactive (hypothyroid). The **end** result is usually hypothyroidism.

### 2. No chemical message from the brain

The pituitary gland in the brain releases a hormone called TSH. It tells the thyroid gland to release thyroid hormones. If the pituitary gland does not release TSH, then even a healthy thyroid gland cannot make thyroid hormones. This can happen as a result of certain birth defects, after surgery or trauma to the brain, or after radiation to the brain for cancer. If this is the cause of your child's hypothyroidism, then there may be other pituitary hormones missing.

### 3. Association with other syndromes or other family member with hypothyroidism

Children who have siblings or parents who are hypothyroid are more likely to develop it themselves. Hypothyroidism is found more often in children with certain syndromes, or with autoimmune diseases like type I diabetes. The reason is not always known. Children with Turner's syndrome, Down syndrome, Noonan's syndrome or Klinefelter's syndrome are at higher risk for developing hypothyroidism.

### 4. Treatment for hyperthyroidism

Children who have had surgery or radioactive iodine ablation treatment for hyperthyroidism often end up with hypothyroidism.

### 5. Iodine deficiency

Because iodine is added to our table salt, iodine deficiency is rarely seen in North America. It is very common in some European countries and in developing countries. If the body does not get enough iodine, it cannot make enough thyroid hormone. People who are iodine deficient are usually hypothyroid and have a very large thyroid gland (goiter).

## How is hypothyroidism diagnosed?

Hypothyroidism is diagnosed with a blood test, usually after a complete check-up by a doctor. Blood levels are done for the thyroid hormone, TSH, and thyroid antibodies. Children who are hypothyroid and have high levels of thyroid antibodies have autoimmune (Hashimoto's) thyroiditis.

Your doctor may want your child to have an ultrasound or a type of x-ray to help find the cause of the hypothyroidism.

Your child may have some or all of these symptoms of hypothyroidism:

- not growing taller
- enlarged thyroid gland
- low energy, sleeping more
- not as hungry
- may gain weight
- coarse hair and dry skin
- constipation
- puberty doesn't progress (in children who become hypothyroid during puberty)
- not tolerate the cold
- doesn't start puberty (in children who become hypothyroid before, but close to the age when puberty may start)
- irregular or heavier periods (girls who have started menstrual periods)

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