

## What is hypothyroidism?

Hypothyroidism is usually a permanent condition where the thyroid gland is underactive and cannot produce enough thyroid hormone.

Hypothyroidism is the most common thyroid disorder in Australia, affecting around 1 in 33 Australians<sup>1</sup>. It is more common in women than men, and in those aged more than 60 years<sup>1</sup>.

**Primary hypothyroidism** is where the thyroid gland is unable to produce sufficient thyroid hormone.

**Secondary hypothyroidism** is very rare, and caused by problems with the pituitary gland, which normally signals the thyroid to produce hormone. When the pituitary is damaged, it does not produce enough thyroid stimulating hormone (TSH), resulting in low levels of thyroid hormone being made by the thyroid gland.

## What is subclinical hypothyroidism?

Subclinical hypothyroidism is a condition in which there is an elevation of thyroid stimulating hormone levels with normal thyroid hormone levels. It may cause mild symptoms of hypothyroidism and can progress to clinically diagnosed hypothyroidism in some people.

## What causes hypothyroidism?

In Australia, the most common cause of hypothyroidism is Hashimoto's disease. This is an autoimmune disorder that causes the immune system to attack the thyroid gland. This is also commonly called thyroiditis, and results in swelling and inflammation of the thyroid gland and destruction of thyroid cells.

Other causes of hypothyroidism include:

- Surgery to remove all or part of the thyroid gland (total or hemi-thyroidectomy)
- Radioactive iodine used to treat an overactive thyroid
- Congenital Hypothyroidism – thyroid gland defects, which are present from birth
- Genetic disorders
- Radiation treatments to the head and neck in early life – e.g. X-rays and radiotherapy for cancer
- Iodine deficiency due to a lack of iodine in the diet (which is not common in Australia)
- New immunotherapies for cancer treatment



## Symptoms of hypothyroidism

The symptoms of hypothyroidism depend on its severity and the underlying cause. The symptoms can start slowly and worsen gradually over time as thyroid function deteriorates.

Many symptoms of hypothyroidism are not-specific to this condition, and it therefore can be hard to identify early. These symptoms are also common in people who do not have hypothyroidism. Determining the cause of your symptoms through pathology testing is very important.

Symptoms can include:

- Increased sensitivity or intolerance of cold temperatures
- Fatigue, weariness, lethargy
- Weakness
- Dry, rough, and/or cold skin
- Dry and brittle hair and/or hair thinning
- Constipation
- Unexplained weight gain
- Depression or low mood
- Hoarse/deep voice, slow speech
- Poor concentration / reduced attention span
- Joint and/or muscle aches and pains, cramps
- Heavy or irregular menstrual periods
- A pale appearance
- Fluid retention – swollen face, hands, ankles and/or feet
- Difficulty falling or maintaining sleep
- Breathlessness
- Goitre (enlarged thyroid gland)
- Difficulty getting pregnant
- Slow heart rate

## How is hypothyroidism diagnosed?

### 1. Medical History and Physical Examination

Your doctor may ask you questions about:

Your personal health and medical history, as well as your family's health history. This will include questions about any thyroid disease or autoimmune disorders, any previous radiation therapy or thyroid surgery, any recent infections or illnesses, your pregnancy history, current and previous medications, any other medical conditions or concerns, and your diet.

Any symptoms that may suggest thyroid disease (see symptoms section).

The physical examination may include feeling the front of your neck to check for thyroid swelling, and checking your pulse (heart rate), reflexes and skin changes.



## How is hypothyroidism diagnosed? (cont'd)

### 2. Measurement of Thyroid Stimulating Hormone

If symptoms suggest hypothyroidism, the next test your doctor will do is a blood test to measure the level of thyroid stimulating hormone (TSH). This involves taking a small amount of blood and sending it to the lab for tests.

#### *What do the results mean?*

- **Normal TSH levels** suggest hypothyroidism is unlikely. Measurement of other free thyroid hormones (T3 and T4) is not usually necessary. Your doctor may do other tests to investigate the cause of your symptoms.
- **High TSH levels** may indicate hypothyroidism. In this case, a repeat blood test will be performed to confirm TSH levels and measure free thyroxine (T4) levels.
- **High TSH with low T4 levels** suggest primary hypothyroidism.
- **High TSH with normal T4 levels** suggest subclinical hypothyroidism. TSH levels return to normal without treatment in up to 50% (half) of people with mildly elevated TSH levels<sup>2</sup>. TSH and free T4 levels should therefore be re-measured 6-8 weeks later to confirm results. This can also include an additional blood test to measure thyroid antibodies.

### 3. Measurement of thyroid antibodies

A blood test to measure thyroid antibodies can check for thyroid autoimmune disease. This can be done on the same sample as the thyroid function test.

#### *What do the results mean?*

If elevated antibodies are found, this indicates the presence of a thyroid autoimmune disorder, usually Hashimoto's Disease.



## How is hypothyroidism treated?

The goal of treatment is to improve symptoms and restore normal body function through replacement of thyroid hormone. For most people, this usually means lifelong treatment.

### Thyroid hormone replacement therapy (levothyroxine, or more simply, thyroxine)

If you have primary hypothyroidism, you will usually need lifelong treatment with levothyroxine (often simply referred to as thyroxine) tablets. This medication is taken once per day, as soon as you wake in the morning at least 15-30 minutes before breakfast. The dose needs to be carefully monitored with blood tests to ensure the correct dose is given and avoid hormone levels getting too high. If this occurs, symptoms can develop such as an increase in heart rate, unexplained weight loss, anxiety/nervousness, sweating, diarrhoea and an intolerance to hot temperatures. It is common for doses to be adjusted at the start of treatment until you reach a stable dose and to make sure you are receiving the optimum dose that brings your TSH level into a normal range.

Once the dose is stabilised, your doctor will recommend yearly check-ups to monitor your thyroid hormone levels and adjust treatment if necessary.

For some people who take thyroxine, symptoms persist even though medication is taken routinely and TSH levels return to normal. These symptoms may be caused by other health problems, that your doctor will be able to determine. Symptoms may also persist because the dose of thyroxine may not meet the needs of every individual patient, for reasons that are not yet clear. Combined treatment of T3 with thyroxine is sometimes prescribed, although there is no evidence to show it works better than thyroxine alone<sup>2</sup>.

Treatment of hypothyroidism with desiccated thyroid extract (made from porcine (pig) thyroid) is not approved as a medication in Australia. This is because the amount of thyroxine absorbed from desiccated thyroid extract can vary from one batch to the next, and result in variable blood test results. There also remains the remote possibility of the extract containing animal transmitted viruses.

### Subclinical hypothyroidism

If you have subclinical hypothyroidism and some symptoms, your doctor may decide on a trial of thyroxine for a few months to see if it helps.

If you have subclinical hypothyroidism and few or no symptoms, you will require follow-up blood tests to ensure that you are not developing clinical hypothyroidism. Depending on the level of TSH and if thyroid antibodies are found, these tests should initially be performed every 6-12 months.

## What can I do to help?

If you have hypothyroidism, it can help to understand the symptoms associated with too much or too little thyroid hormone. By monitoring symptoms and discussing any changes with your doctor, your medication dose can be adjusted to avoid under or over treatment.

If you are taking thyroid hormone replacement medication (thyroxine), it is important to take the medicine every day, even when you feel better. This is important to keep your thyroid hormone levels in a normal range and avoid symptoms returning.

## FAQs about hypothyroidism

### *What is the best time of day to take my thyroid hormone replacement medication (thyroxine)?*

Thyroxine medicine works best when taken on an empty stomach. Ideally, they are best taken in the morning as soon as you wake, with water only, at least 15- 30 minutes before breakfast or a hot drink. If you take other medicines in the morning, talk to your doctor about when to take your thyroxine medication. This is important as some medications affect how others work.

### *What should I do if I miss taking my thyroid medication?*

If you miss a morning dose, but remember later in the day, you can take your medicine as soon as you remember. If you missed a day, take double your medicine the following morning.

### *Can I take thyroid medication while I am on the contraceptive pill?*

You can take the oral contraceptive while taking thyroxine medication. However, the dose may need to be adjusted as the hormones in the pill can affect your thyroid hormone levels. You should discuss this with your doctor who can adjust your dose if necessary.

## When to see your doctor

You should see your doctor if you have a family history of thyroid disease and develop symptoms.

If you are taking medication for hypothyroidism, see your doctor if symptoms change or get worse. This can mean your dose needs to be increased. On the other hand, your dose may be too high if you develop heart palpitations, unexplained rapid weight loss, shakiness, faintness or sweating.

If you have subclinical hypothyroidism and notice a change in your symptoms, see your doctor.

## Questions to ask your doctor

Seeing your doctor or having a medical problem can be stressful. It often takes time for information to sink in and it is very common to feel overwhelmed by what is happening. Sometimes it helps to write down questions before you go.

Some questions that might be useful for you are:

- What type of hypothyroidism do I have?
- Is my hypothyroidism permanent or temporary?
- Will I need to take thyroid hormone replacement medication?
- When should I take my medication?
- Should other members of my family get checked for hypothyroidism?
- How often will I need my thyroid hormone levels checked and monitored?
- When do I need another appointment?

### *Should I take thyroxine medication while pregnant?*

Yes, and it is very important to let your doctor know as soon as you become pregnant. The dose of thyroxine will be increased as your body needs more thyroid hormone as pregnancy progresses. Your doctor will regularly monitor thyroid hormone levels to ensure you have enough thyroid hormone to keep you and your baby healthy.

### *Where to go for more information and support?*

Visit your doctor (GP)

Your Endocrinologist

The Australian Thyroid foundation: <https://www.thyroidfoundation.org.au/>

For support, visit...

Visit The Australian Thyroid Foundation for more information and access to support groups: <https://www.thyroidfoundation.org.au/>

Call Quitline at 137848 or visit their website for help with quitting smoking: <https://www.quit.org.au/>

Visit Live Lighter for help, advice and tips to live a healthier lifestyle: <https://livelighter.com.au/>

## Common terms and definitions

**Amenorrhoea** – Loss of menstrual periods.

**Autoimmune disorder** – A condition where the body's immune system attacks healthy cells.

**Benign** – A benign tumour is one that is not cancerous.

**Congenital** – A condition present from birth.

**Hashimoto's disease** – An autoimmune disease where the immune system attacks the thyroid gland. It causes inflammation and swelling of the thyroid.

**Insomnia** – Trouble sleeping or staying asleep.

**Malignant** – Contains cancerous cells.

**Menorrhagia** – Heavy menstrual periods.

**Subclinical** – When a disease is not severe enough to reach the criteria for diagnosis.

**Tumour** – An abnormal growth in the body. Tumours can be benign or malignant.

## References

1. So M, MacIsaac RJ, Grossmann M. Hypothyroidism. Aust Fam Physician. 2012;41(8):556-562.
2. Walsh JP. Managing thyroid disease in general practice. Med J Aust. 2016;205(4):179-184.