



**Thyroid dysfunction:
what we should all know**

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Did you know... up to 300 million people worldwide experience problems with their thyroid,¹ although over half are presumed to be unaware of their condition?²

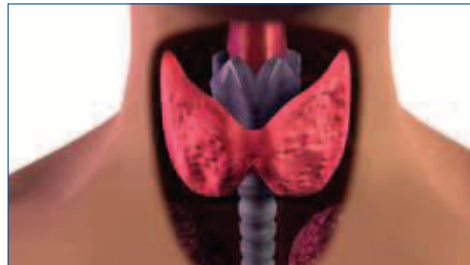
This helpful guide has been developed to support the millions of people living with thyroid dysfunction and raise awareness of these little known problems. It provides key information on two common thyroid problems; including signs and symptoms to look for, causes and complications, diagnosis and treatment advice and tips on living with the condition. Specific information for pregnant women, children and older people with thyroid problems is also provided.

About our thyroid

The thyroid is a butterfly-shaped gland that sits at the base of the neck, in front of the windpipe. It is the “master controller” of metabolism.³

The thyroid gland controls our metabolism through two hormones it produces: thyroxine (also known as T4) and triiodothyronine (also known as T3). The thyroid works with two parts of the brain to ensure that the correct amount of thyroid hormone circulates in our blood; the pituitary gland, which produces thyroid stimulating hormone (TSH) and the hypothalamus, which produces thyrotropin releasing hormone (TRH).⁴ Problems occur when the thyroid gland does not supply the correct amount of hormones.

If your thyroid is underactive it produces too little thyroid hormone, resulting in a condition called **hypothyroidism**. People with hypothyroidism use energy more slowly and their metabolism also slows down.⁵



If your thyroid is overactive the gland releases too much thyroid hormone into the bloodstream, resulting in a condition called **hyperthyroidism**. This condition speeds up metabolism.⁶

Hypothyroidism and hyperthyroidism are two widespread thyroid problems, of which hypothyroidism is much more common. Did you know that these disorders are eight times more common in women than in men?⁷

Symptoms of thyroid dysfunction

Each person's experience of thyroid problems is unique and not everyone will encounter all the symptoms associated with the disease. If you recognise any of the symptoms discussed below or have any concerns about thyroid dysfunction, please talk to your healthcare provider or family doctor.

Watch out for...

The two thyroid dysfunctions (hypothyroidism and hyperthyroidism) are quite different conditions, but in both cases the thyroid gland can become larger than normal meaning it can be visible or felt under the skin at the front of the neck. Goitre is the medical term for an enlarged thyroid gland. The most common cause of goitre is iodine deficiency.⁸ Iodine rich foods include sea fish/seafood, lamb, eggs, and products with iodised salt.⁹

Hypothyroidism

The signs and symptoms of hypothyroidism are similar to other common medical problems, so the condition is often overlooked. Symptoms may develop over a long period of time and go unnoticed. Key changes in your body to look for include:^{5, 10, 11, 12}

- Fatigue, drowsiness and/or weakness
- Cold intolerance (not being able to tolerate the cold like those around you)
- Impaired memory
- Weight gain or increased difficulty losing weight (despite sensible diet and exercise)
- Depression

- Constipation
- Abnormal menstrual periods and/or fertility problems
- Joint or muscle pain
- Thin and brittle hair or fingernails and/or dry flaky skin

People need to be aware of the signs of hypothyroidism as even mild cases where patients may have few or vague symptoms (medically known as subclinical hypothyroidism)¹³ can, if untreated, lead to more serious disease.

Hyperthyroidism

Hyperthyroidism is not as common as hypothyroidism. The key symptoms to look out for include:^{6, 14}

- Weight loss (even when eating normally)
- Anxiety and irritability
- Very fast heart rate (often more than 100 beats per minute)
- Prominent, staring eyes (typical for Graves' disease; explained later in this guide)
- Trembling hands
- Feeling very weak
- Hair loss
- Frequent bowel movements
- Fast growing fingernails
- Thin and very smooth skin
- Sweating more than usual
- Abnormal menstrual periods

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tions in the heart) through to heart attacks.¹⁴ Additionally, in women who have gone through the menopause, hyperthyroidism increases the risk of osteoporosis (a loss of bone mass) and potentially fatal fractures.¹⁴

Causes of thyroid dysfunction

There are many reasons why hypothyroidism develops but a common cause is the lack of iodine.¹⁰ The thyroid needs iodine to produce its hormones and too little iodine in your diet can cause your thyroid to stop working properly.

The most common cause of acquired hypothyroidism is a condition called Hashimoto thyroiditis,¹⁷ where the body's own defence system (antibodies) attacks the thyroid. This causes a painless inflammation process which can damage the gland and reduce its ability to properly function.¹¹

Other reasons for low levels of thyroid hormone in your blood include:

- Surgical removal of the thyroid gland
- Radioiodine treatment of the thyroid gland
- Radiation therapy to the head or neck
- Being born without a thyroid gland (also called congenital hypothyroidism).¹¹ Congenital hypothyroidism is thankfully very rare, only about one in every 4,500 babies are affected¹⁸
- Disease to either the pituitary gland or the hypothalamus; this can cause your thyroid to become underactive because of missing stimulation of the thyroid gland⁵

Consequences of thyroid dysfunction

The physical symptoms of thyroid dysfunction are unpleasant and can affect self-esteem, work, home and family life. However, more worryingly is that left untreated they can have serious and potentially life-threatening complications.

Untreated hypothyroidism can lead to a heart rate so slow that it can cause patients to slip into a coma.¹⁰ Furthermore, it is also associated with high blood pressure and elevated cholesterol levels (significant risk factors of heart disease),¹⁵ infertility¹² and Alzheimer's disease (increased risk in women).¹⁶

Untreated hyperthyroidism may lead to cardiac arrhythmia (an irregular rate of muscle contrac-

tion) occurs for different reasons. The most common cause (up to 70% of all cases) is a disease of the immune system called Graves' disease. Graves' disease tends to run in families and occurs more frequently in young women.⁶

Thyroid nodules

Thyroid nodules (abnormal growths/lumps on the thyroid gland) can also cause hyperthyroidism.⁶ Nodules in the thyroid gland are very common and approximately 5% of them are malignant (thyroid cancer).¹⁹ Therefore nodules generally need further investigating by a doctor.

The growth of nodules can affect the proper functioning of the thyroid gland.²⁰ If the nodule is producing excessive amounts of thyroid hormone then the person will have symptoms of hyperthyroidism. Nobody is sure why people develop thyroid nodules, but a lack of dietary intake of iodine is thought to be a factor.²⁰

Other causes of hyperthyroidism include:

- Thyroiditis (inflammation of the thyroid gland)⁶
- Taking too much thyroid hormone (given to treat hypothyroidism or goitre)⁶

People at risk of thyroid dysfunction

You are at a greater risk of developing hypothyroidism if you:⁵

- Are an adult female; though it is important to remember that thyroid problems also affect men, children and teenagers
- Are pregnant, a new mother, or of menopausal age
- Have a family history of thyroiditis
- Suffer from an autoimmune disease, such as type 1 diabetes
- Are over the age of 50

- Have had thyroid surgery
- Have Down's or Turner's syndrome
- Have had radioiodine treatment
- Have been exposed to x-ray or radiation treatments of the neck
- Are White or Asian; these populations are more at risk if compared to others

Hyperthyroidism due to Graves' disease tends to run in families, and it occurs more often in young women. However, little is known about why specific individuals get this disease.⁶ You are more likely to develop hyperthyroidism if you have special thyroid antibodies in your blood, which stimulate the thyroid gland in Graves' disease.

Detecting and treating thyroid dysfunction

Many patients remain undiagnosed with thyroid problems and suffer for a long time as their symptoms have been confused with other conditions, such as depression, pregnancy or the menopause. Thyroid dysfunction can be confirmed by your doctor through a simple blood test to check the level of TSH and thyroid hormones in your blood.⁵



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Treatment for thyroid dysfunction is straight forward, well-established and **highly effective**.

Hypothyroidism treatment

As there is no cure for hypothyroidism, the aim of treatment is to replace the missing thyroid hormone in the body. Taken daily, levothyroxine, which is synthetically produced thyroid hormone, should enable patients to live a symptom free life.⁵ This medication has been used very successfully since the 1950s.²¹ However, it is important to remember that treatment is a lifelong commitment and medication has to be taken every day even when symptoms are under control.⁵

Once your correct dose of levothyroxine is found by you and your doctor, you will probably have a check up just once or twice a year. However, it is advisable to see your doctor more frequently if any changes in your condition occur.

Hyperthyroidism treatment

The treatment of hyperthyroidism is more complex. You can have surgery to remove part or all of the thyroid gland or use radioactive iodine therapy to destroy cells in the thyroid gland. Both treatments are likely to result in you developing hypothyroidism. Alternatively doctors can block the thyroid hormone production with antithyroid drugs.⁶ Antithyroid medication can be very effective, but there may be side effects. Your doctor will explain the advantages and disadvantages of these treatments to help you weigh up your options.

Thyroid dysfunction and pregnancy

Thyroid problems during pregnancy can be very serious and it is of utmost importance that the conditions are caught early. Women with a family history of thyroid dysfunction or other autoimmune conditions should speak to their doctor about screening either before, or in the early stages, of pregnancy.

Hypothyroidism

About 5% of pregnant women develop hypothyroidism²² but it can be easily overlooked as symptoms⁷ can be similar to the changes during pregnancy, such as putting on weight, feeling tired, and swelling.

Failure to treat hypothyroidism during pregnancy is potentially very dangerous as it increases the risk of premature birth and leaves the baby at risk of developmental and learning problems. Hypothyroidism can also cause the placenta to separate from the inner wall of the uterus before the baby is born (placental abruption), a potentially life-threatening condition for both mother and baby.^{7,23}

Treatment for hypothyroidism in pregnancy

Treatment for hypothyroidism during pregnancy is the same as it is when you are not pregnant; levothyroxine is recommended throughout pregnancy and while breast-feeding.¹² Treatment is extremely important as it protects both the mother and the baby from further complications. Pregnant women with hypothyroidism will need more frequent check-ups / monitoring to ensure their dose of levothyroxine is correct. During pregnancy, generally the levothyroxine dosage has to be increased by 25–50%.

Hyperthyroidism

Hyperthyroidism in pregnancy is rare, but if left untreated can be serious for both mother and baby.²⁴ Problems can include miscarriage, poor growth of the baby in the womb, premature labour and delivery, high blood pressure,⁷ physical defects in the baby, and “thyroid storm” where a stressful event or massive infection can cause a dangerous rise in thyroid hormone levels.⁷

Graves' disease is the cause of almost all (85%) cases of hyperthyroidism during pregnancy.²⁴ Pregnant women with Graves' disease may feel better during pregnancy because the immune system is suppressed to protect the baby, but the disease usually worsens again in the first few months after delivery.

Hyperthyroidism in pregnancy is also difficult to diagnose because many of the normal changes during pregnancy are similar to symptoms of the dysfunction, for example, feeling hot, excessive sweating, vomiting or a racing heartbeat.

If you are pregnant and have a heartbeat above 100 beats per minute plus are losing weight, you should see your doctor immediately to rule out hyperthyroidism.

Treatment for hyperthyroidism in pregnancy

Treatment for pregnant women with hyperthyroidism is sometimes different to those offered to other women as some of the medications (especially in higher doses) can harm the unborn baby. Some pregnant women have surgery to partially remove their thyroid gland if they are allergic to medication or need it at such high doses that it would damage the baby's thyroid gland.²⁴ Surgery is carried out in the middle of pregnancy when the risks of miscarriage or premature labour are at their lowest.²⁴ Treatment with radioactive iodine is generally forbidden during pregnancy.²⁴



Top tips

- **Speak up...** *If you have been diagnosed with thyroid dysfunction, tell your family so they can offer you support. In addition, as thyroid dysfunction often runs in families, it might be advisable for your close relations to check their thyroid hormone levels if symptoms are present*
- **Tell your employer about your condition and symptoms you are experiencing**
- **Educate...** *When visiting your doctor about your condition take your partner to help him / her understand what you are going through*
- *If you see a specialist to manage your thyroid dysfunction you should ask him / her to send your family doctor a copy of your test results*
- *Keep a note in your wallet or handbag with details of your condition, the medicines you take and the contact details of your doctor*
- **Support...** *Children diagnosed with thyroid dysfunction will need the support of their families to ensure they take the medication every day and manage their problems. It is helpful to let the school know your child's diagnosis and medication*

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After the birth

Once the baby is born, women who have had previous thyroid dysfunctions may experience a flare up of their disease. Up to 7% of women develop an inflammation of their thyroid gland, at any point up to a year after childbirth.²⁴ This can cause mild thyroid dysfunction that lasts one or two months and may be associated with postnatal depression.

If you have recently had a baby and your exhaustion continues for more than a few months you should ask your doctor to investigate and rule out thyroid dysfunction as a possible cause.²⁴

Young people and thyroid dysfunction

As the thyroid gland controls the metabolism, if a problem develops in childhood it can affect physical and mental growth, impacting on a child's social and educational development. It is especially important for parents to understand the signs, symptoms and treatments of thyroid dysfunction to avoid long-term issues.¹⁸

Hypothyroidism in the young

Children can be born without a properly working thyroid gland (congenital hypothyroidism) or develop this dysfunction in the same way as adults can; too little iodine in their diet, an autoimmune disease, or injury to their thyroid gland.

The signs of hypothyroidism in children depend on how old they are and when the problem starts:

- Babies may have jaundice for longer than usual, seem tired all the time/fatigued, be constipated and have feeding problems¹⁸

- In older children growth of bones and teeth may be stunted¹⁸
- In school children learning problems may occur and puberty can be delayed²⁵
- Hypothyroidism in older female teenagers can lead to frequent, heavy menstruation which can cause anaemia (abnormally low levels of healthy red blood cells)²⁶

Blood tests and an x-ray of the hand and wrist (knee in infants) are used to check if a child has hypothyroidism and how severe the condition is. The x-ray establishes how the child is growing and if the so-called bone age is delayed. Treatment in children is the same as in adults, levothyroxine is recommended, but the dose will be tailored to match the weight and individual need of the child.¹⁸

Hyperthyroidism in the young

As with adults, Graves' disease is responsible for nearly all the cases of hyperthyroidism in children.¹⁸ Thankfully it's a very rare condition in this age group, affecting only one in 10,000,000 children.¹⁸ Graves' disease tends to be much more common in teenagers and like all thyroid dysfunctions, affects more girls than boys.¹⁸

Spotting Graves' disease in children can be difficult because it often develops slowly, however changes in behaviour and school performance, sleeplessness, restlessness/irritability and needing to get up in the night to urinate are common signs to look for.¹⁸ Other symptoms include a thyroid that is so large it is visible, trembling hands, increased appetite but with weight loss, diarrhoea



and the classic prominent staring eyes.¹⁸ Girls who develop hyperthyroidism after puberty often have light, infrequent periods or may stop bleeding altogether.¹⁸

Treatment for children with hyperthyroidism is the same as for adults, but radioactive iodine therapy is unlikely to be used because the long-term effects on children and teenagers are not known. Surgery may be preferred in children who have side effects to the drug treatments available.¹⁸ Parents will be relieved to hear that treatment is as effective in children as it is in adults.

Thyroid dysfunction and aging

Thyroid dysfunction becomes very common as we get older and elderly women are particularly vulnerable. Worryingly, thyroid problems are often missed because older people have less visible symptoms than younger sufferers, and often the signs are accepted as 'just part of ageing'.²⁷ This can leave elderly people at risk of not getting the essential support and treatment they need.

Treatment for an older person with hypothyroidism is the same as for younger adults. However, they will often start on lower doses of levothyroxine²⁷ to enable their body to adjust to the changing hormone levels.²⁷ The dose is increased in steps every four to six weeks until tests show that their thyroid hormone levels are back to normal.²⁷

When an older person has hyperthyroidism, treatment still includes antithyroid drugs and radioactive iodine therapy, but surgery often may be considered too risky.²⁷ Therapy is closely monitored as changing levels of thyroid hormone affects the heart.²⁷ Once an older patient's thyroid hormone levels are back to normal, if they still have serious symptoms, such as angina, then these will be treated separately.²⁷

Living with thyroid dysfunction

For many people, finding out they have a thyroid dysfunction is a relief.¹ For others the feelings are more mixed as their condition may make them feel depressed and without the energy to cope with treatment.

What you need to remember is that treatment for problems of the thyroid gland is very effective.⁵

If you have hypothyroidism you will need to take levothyroxine for the rest of your life, even when you have no symptoms. If you stop, your symptoms will return.⁵ It may take a while for you to feel the benefit of treatment and it could be a couple of months until your doctor finds the dose of medication that suits you. However, once treatment has settled down you should feel better than you have for a long while.⁵

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Your personal hyperthyroidism checklist

If you **AGREE** with 5 or more of these statements, **tell your doctor about your symptoms**. There is a possibility that you may be suffering from hyperthyroidism.

	Yes	No		Yes	No
I feel anxious and irritable a lot of the time	<input type="radio"/>	<input type="radio"/>	I have been sweating more than usual	<input type="radio"/>	<input type="radio"/>
My hands and fingers tremble slightly	<input type="radio"/>	<input type="radio"/>	I often feel weak	<input type="radio"/>	<input type="radio"/>
My skin and hair seem to be getting thinner, and my nails are growing faster than they used to	<input type="radio"/>	<input type="radio"/>	Everything in my body seems to have speeded up, including my bowel functions and metabolism, and my weight is going down despite increased appetite	<input type="radio"/>	<input type="radio"/>
My heart rate has become quite fast	<input type="radio"/>	<input type="radio"/>	My menstrual cycle has changed	<input type="radio"/>	<input type="radio"/>
My eyes appear to be staring, or bulging	<input type="radio"/>	<input type="radio"/>			

Your personal hypothyroidism checklist

If you answer 5 of these questions with **YES**, **tell your doctor about your symptoms**. There is a possibility that you may be suffering from hypothyroidism.

	Yes	No		Yes	No
I feel tired and sleepy most of the time, with little energy and stamina	<input type="radio"/>	<input type="radio"/>	I notice a lot of negative thought and feel depressed	<input type="radio"/>	<input type="radio"/>
My brain works less efficiently, my thinking is foggy, my concentration and memory are poor	<input type="radio"/>	<input type="radio"/>	My motions and reflexes have become slow	<input type="radio"/>	<input type="radio"/>
Everything in my body seems to have slowed down, including my bowel functions and my metabolism, and my weight is going up	<input type="radio"/>	<input type="radio"/>	I feel stiffness and aches in my muscles and bones as well as a numb feeling in my hands	<input type="radio"/>	<input type="radio"/>
My skin and my hair have become dry, pale and puffy, my nails are brittle	<input type="radio"/>	<input type="radio"/>	My blood pressure has gone up and my heart rate is slow	<input type="radio"/>	<input type="radio"/>
I feel cold most of the time (even when other people are feeling comfortable)	<input type="radio"/>	<input type="radio"/>	My cholesterol level has gone up	<input type="radio"/>	<input type="radio"/>

For further information

If you would like any further information on thyroid dysfunction, please visit the following websites:

www.thyroidweek.com www.thyroid-fed.org

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