

HYPOTHYROIDISM

GET THE FACTS

Updated February 2008

HYPOTHYROIDISM AND YOU

WHAT IS HYPOTHYROIDISM?

Hypothyroidism is a common medical condition experienced by an estimated 3.7% of the population or approximately 11.2 million people throughout the United States. It affects both sexes, but is more common in women, affecting close to 4.2% of all American women. Hypothyroidism should not be confused with **hyperthyroidism**, which is a very different condition of the thyroid, with its own distinct symptoms.

If you have been diagnosed as having hypothyroidism, it means your body lacks adequate levels of thyroid hormone to meet your body's needs. This means your **thyroid gland** — a butterfly-shaped gland located in the neck beneath your Adam's apple — is *underactive* and not functioning as well as it should. This deficiency may be caused either by **inflammation of the thyroid gland** or as the result of **treatment of hyperthyroidism (overactive thyroid gland)**. If inflammation is the cause, the thyroid gland may become enlarged. Though it may not be immediately noticeable to the eye, the first sign of a swollen thyroid (also called a **goiter**) may be a firm feeling in the neck.

If you have hypothyroidism, you may experience one or more of the following symptoms. Symptoms may range from mild or moderate, to severe in some cases.

The information in this brochure is not intended to replace your doctor's advice.

GET THE FACTS:
Hypothyroidism is an underactive thyroid gland compared to hyperthyroidism, which is an overactive thyroid gland.

SIGNS AND SYMPTOMS

Abnormal menstrual cycles
Coarse, dry hair
Constipation
Decreased sex drive
Depression
Dry, rough pale skin
Facial and hand puffiness
Fatigue
Hair Loss
Intolerance to cold
Irritability
Memory loss
Muscle aches and cramps
Slow movements
Weakness
Weight gain or increased difficulty losing weight

GET THE FACTS:
Hypothyroidism
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It's important to note that no two people experience hypothyroidism in quite the same way. One person may have one main symptom, and another, several symptoms that are minor or moderate. In fact, some individuals with hypothyroidism have no symptoms at all. That's why it's vital to talk to your doctor about testing, in much the same way you would discuss your cholesterol or blood pressure.

Without treatment, hypothyroidism and its symptoms usually become worse. Though rare, complications of untreated hypothyroidism may lead to severe depression, heart failure, or life-threatening coma. But the good news is hypothyroidism can be easily diagnosed by a simple blood test and treated effectively over time.

THE THYROID AND YOUR METABOLISM

The thyroid gland is a butterfly-shaped gland located in the neck, beneath your Adam's apple. The thyroid produces two key hormones, **thyroxine** (also known as **T₄**) and **triiodothyronine** (or **T₃**). These two hormones, T₄ and T₃, travel throughout the body in the bloodstream and affect your metabolism. This includes how well your body burns calories, fats, and sugars, and helps to determine its capacity to build muscle tissue (through weight-bearing exercise such as walking or weight training). Thyroid hormones also affect many organs of your body, including the heart, which beats harder and faster under the influence of thyroid hormones.

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Figure. Thyroid hormones are monitored by the pituitary gland, which produces TSH that stimulates the thyroid gland to release thyroid hormones.

Thyroid hormones are monitored by the small, pea-sized **pituitary gland** located at the base of the brain (see Figure), which works to ensure your body has just the right levels of hormone available to meet its needs. The pituitary gland does this by producing a hormone of its own, **thyroid-stimulating hormone (TSH)**. TSH stimulates the thyroid gland to produce the right amount (or level) of thyroid hormones.

However, if the thyroid gland becomes inflamed or injured, it may be unable to produce enough hormone to meet your body's needs. The most common cause of thyroid gland failure is **autoimmune thyroiditis (or Hashimoto's disease)**, a form of inflammation caused by a person's own immune system. Autoimmune thyroiditis occurs when the body's immune response "attacks" the thyroid gland much like it normally would an outside invader of the system such as bacteria.

The second major cause of thyroid gland failure is the result of **previous treatment for hyperthyroidism, or overactive thyroid gland**. If either radioactive iodine or thyroid surgery has been used to control that condition, the thyroid often becomes *underactive* as time

goes on. Several other rare causes of *underactive* thyroid may also occur, including diseases that affect the pituitary gland's ability to make adequate TSH to stimulate the thyroid gland. For detailed information on other thyroid diseases, symptoms, and treatment, be sure to review the list of resources at the end of this brochure.

FIND OUT IF YOU'RE AT RISK

Because symptoms can vary and it is possible to be affected by hypothyroidism without major symptoms, a simple blood test is used to determine thyroid hormone levels. These reliable laboratory tests can accurately measure blood levels of T_4 and TSH in the body. A person with an *underactive* thyroid gland will be found to have **low levels of T_4** , and **high levels of TSH**. If this is the case, the imbalance of T_4 and TSH hormones in the bloodstream needs to be restored to more normal levels. Additional testing will assess if antibodies are working against the thyroid gland, which is a sign of autoimmune thyroiditis.

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WHEN IT'S TIME FOR TREATMENT

Levothyroxine can effectively treat hypothyroidism and its symptoms. This medication provides replacement T₄ hormone that the thyroid gland has failed to produce. It offers patients the convenience of a once-daily dose, and it is recommended that patients take it in the morning for best results. It is available in multiple strengths, to meet each patient's individual needs.

Blood tests should be evaluated again at 6 to 10 weeks, until just the right **levothyroxine** dose is established. Once this is determined, treatment will likely continue throughout the patient's life and should be re-evaluated at least once each year to monitor progress and make any adjustments necessary.

Side effects of this therapy are usually caused by taking too little or too much medication. Remember, it takes time to restore the normal serum thyroid hormone levels. If after several weeks, patients experience **continued fatigue, insomnia, weak muscles, heart palpitations, or shortness of breath**, their medication may need to be adjusted.

A significant reason why precise monitoring is needed is due to the fact that having too much thyroid hormone in the body may cause other health concerns. Research suggests that too much hormone may cause calcium loss and increase a patient's risk for osteoporosis, the progressive bone-thinning disease. Osteoporosis can lead to fractures of the hip and vertebrae, so it's vital to determine the precise level of hormone needed.



Also, for patients with heart problems, too much hormone may lead to worsening of heart conditions such as angina or could increase the risk of heart attack. Be sure to tell your doctor about any medical problems you experience during treatment and, if these health issues are a concern for you, **you and your doctor may** consider monitoring your treatment more frequently.

It is possible that levothyroxine can be taken during pregnancy as it simply replaces the T₄ thyroid hormone that's normally made by the thyroid gland. It's also good to know that **levothyroxine** can be taken safely with many medications. However, taking other medications can sometimes cause people to need a higher or lower dose of **levothyroxine**. It is important for people taking thyroid hormone to keep their doctor up to date with any changes in medications or supplements they are taking.

Thyroid hormones, including levothyroxine, should not be used alone or together with other medicines for weight loss. Routinely prescribed doses of levothyroxine will not help with the weight loss in people with a normal functioning thyroid gland. Larger doses may produce serious or even life-threatening effects particularly when taken with other weight-loss products.

Your doctor will test your blood to determine if you need additional thyroid hormone and monitor your progress to adjust your dose if necessary. Do not take more levothyroxine than your doctor prescribes.

TREATMENT CHECKLIST

- Before starting treatment, be sure to tell your doctor about any other medical conditions you may have, particularly heart disease, diabetes, clotting disorders, and adrenal or pituitary gland problems.
- Be sure to take **levothyroxine** exactly as prescribed and keep your doctor up to date with any changes in other medications or supplements you may be taking.
- Consider keeping a journal to track progress and note any changes you experience.
- Contact your doctor right away if you **feel nervous or have palpitations, insomnia, continued fatigue, mental dullness, or muscle cramps**. These may be signs of too much thyroid hormone.
- Always maintain follow-up appointments so both you and your doctor may monitor your progress effectively.

KEY THYROID FUNCTION TESTS

TEST	ABBREVIATION	TYPICAL RANGES
Free T ₃ index	FT ₃ I	80-180
Free thyroxine	FT ₄	0.7-1.9 ng/dL
Free thyroxine fraction	FT ₄ F	0.03%-0.005%
Free thyroxine index	FT ₄ I	4-11
Free triiodothyronine	FT ₃	230-619 pg/dL
Radioactive iodine uptake	RAIU	10%-30%
Serum thyroglobulin	Tg	0-30 ng/mL
Serum thyroxine	T ₄	4.6-12 µg/dL
Serum triiodothyronine	T ₃	80-180 ng/dL
Thyroid hormone binding ratio	THBR	0.9-1.1
Thyroid microsomal antibody titer	TMAb	Varies with method
Thyroid-stimulating hormone	TSH	0.5-6 µU/mL
Thyroglobulin antibody titer	TgAb	Varies with method
Thyroxine-binding globulin	TBG	12-20 µg/dL T ₄ + 1.8 µgm
TRH stimulation test		Peak TSH 9-30 µIU/mL at 20-30 min

Normal values may differ from laboratory to laboratory.

RESOURCES

For more detailed information on thyroid disease and its related health concerns, please contact the following organizations.

AACE

1000 Riverside Avenue, Suite 205
Jacksonville, Florida 32204
(904) 353-7878
www.aace.com

American Thyroid Association

6066 Leesburg Pike, Suite 550
Falls Church, Virginia 22041
(800) 849-7643
www.thyroid.org

The Endocrine Society

8401 Connecticut Avenue, Suite 900
Chevy Chase, Maryland 20815
(888) 363-6274
www.endo-society.org

National Graves' Disease Foundation

P.O. Box 1969
Brevard, North Carolina 28712
(828) 877-5251
www.ngdf.org

The Thyroid Foundation of America

One Longfellow Place, Suite 1518
Boston, Massachusetts 02144
(800) 832-8321
www.allthyroid.org

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