



DIAGNOSING AND MANAGING HYPOTHYROIDISM STUDY GUIDE



Strengthen your knowledge of hypothyroidism and enhance your commitment to patient care! This guide is designed to provide you with a brief review of the material presented in the *Diagnosing and Managing Hypothyroidism* presentation.

Disease Overview

Thyroid basics

- The thyroid, a butterfly-shaped gland located in the lower part of the neck,¹ is a complex organ with an important function in how the body works²
- The thyroid acts like the body's "thermostat" because it controls how the body converts food into energy^{1,3}

Thyroid hormones

- The pituitary gland, found at the base of the brain, secretes thyroid-stimulating hormone, or TSH, that sends a message to the thyroid gland to produce thyroid hormones²
- Without the right amount of TSH, the thyroid doesn't produce the right amount of the hormones thyroxine (T4) and triiodothyronine (T3)²

Thyroid disorders

- TSH is very sensitive to small fluctuations in T4 hormone levels.⁴ The right levels are needed to keep the body working as it should^{1,2}
- When not enough T4 is produced by the thyroid gland, TSH levels may rise. This is called hypothyroidism, or underactive thyroid^{1,2}
- When too much T4 is produced by the thyroid gland, TSH levels may fall. This is called hyperthyroidism, or overactive thyroid²

- Women over the age of 60 are most at risk of hypothyroidism, with up to 20% of women likely affected⁵

Diagnosis

Symptoms

- Some people with thyroid disorder may not have any symptoms, while others may feel some symptoms described below^{2,6}
- Some symptoms of underactive thyroid are goiter, memory lapses, dry skin, weight gain, brittle nails, muscle pain, and infrequent bowel movements^{2,6}
- Fatigue, feeling cold all the time, and a decrease in activity level are among the most commonly reported symptoms⁵

Testing

- High TSH levels indicate that the thyroid gland is producing too little thyroid hormone (underactive thyroid) causing the pituitary gland to overproduce TSH^{1,7}
- According to AACE, TSH levels in the blood range from 0.45 to 4.12 mIU/L⁴
- A TSH test helps to confirm a diagnosis of thyroid dysfunction¹

Management Considerations

- According to the AACE Guidelines, TSH is very sensitive to even small fluctuations in FT4⁴
- Successful management requires very specific and individualized patient dosing⁴
- Certain patient populations should be regularly screened for symptoms of underactive thyroid⁴
- ATA recommends screening to begin in adult patients at 35 years old and every 5 years thereafter⁴
- Under- or overtreatment can have serious effects, especially in special patient populations³

Glossary of Common Thyroid Disorder Terms^{1,2}

Euthyroid: Represents the state of having normal thyroid function.

Goiter: A condition in which the thyroid gland becomes swollen and is larger than normal.

Graves' disease: A disease that affects the immune system, causing the thyroid to produce too much thyroid hormone (hyperthyroidism).

Hashimoto's disease: A disease that affects the immune system, causing the thyroid to become swollen (goiter) and produce too little thyroid hormone (hypothyroidism).

Hyperthyroidism (overactive thyroid): A condition in which the thyroid gland produces more thyroid hormones than your body needs. TSH levels may fall when too much T4 is produced by the thyroid gland.

Hypothyroidism (underactive thyroid): A condition in which the thyroid gland does not produce enough thyroid hormones. TSH levels may rise when not enough T4 is produced by the thyroid gland.

Myxedema: Also known as severe hypothyroidism, it is a condition where the brain, heart, lungs, kidneys, and other organs slow down and begin to shut down.

Overt hypothyroidism: Hypothyroidism that presents with symptoms.

Subclinical hypothyroidism: FT4 levels are within normal range, but TSH levels are slightly elevated. Symptoms may or may not be present.

Thyroid: A small gland that makes the hormones thyroxine, also called T4, and triiodothyronine, or T3.

Thyroid cancer: A growth of the thyroid gland, either goiter or thyroid nodules, that becomes cancerous.

Thyroid-stimulating hormone (TSH): Produced by the pituitary gland, TSH is the body's signal for the thyroid to produce more T4. If the thyroid doesn't respond, TSH levels rise.

Thyroxine (T4): One of two types of major thyroid hormone produced by the thyroid gland.

Triiodothyronine (T3): One of two types of major thyroid hormone produced by the thyroid gland.

References: 1. American Thyroid Association (ATA). *Hypothyroidism* booklet; Falls Church, VA: American Thyroid Association; 2003. 2. Garber JR, ed; for Harvard Medical School. *Thyroid Disease: Understanding Hypothyroidism and Hyperthyroidism*. Boston, MA: Harvard Medical School; 2004. 3. Braverman LE, Utiger RD, eds. *Werner and Ingbar's The Thyroid. A Fundamental and Clinical Text*. 9th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2005. 4. Garber JR, Cobin RH, Gharib H, et al. Clinical practice guidelines for hypothyroidism in adults: cosponsored by the American Association of Clinical Endocrinologists and the American Thyroid Association. *Endocr Pract*. 2012;18(6):989-1028. 5. Garber JR, Hennessey JV, Lieberman JA III, Morris CM, Talbert RL. Managing the challenges of hypothyroidism. *J Fam Pract*. 2006;55(6):S1-S8. 6. AACE Thyroid Task Force. American Association of Clinical Endocrinologists medical guidelines for clinical practice for the evaluation and treatment of hyperthyroidism and hypothyroidism. *Endocr Pract*. 2002;8(6):457-469. 7. American Thyroid Association (ATA). *Thyroid Function Tests* brochure; 2012. Available at: <http://www.thyroid.org/blood-test-for-thyroid/>. Accessed July 29, 2013.

