

Hypothyroidism

Hypothyroidism means the thyroid gland does not make enough thyroid hormone, so the body slows down. TSH (the pituitary's push signal) goes up trying to wake the thyroid, and T4 (the main thyroid hormone) goes down. Start levothyroxine (replacement thyroid hormone) and recheck blood in 6 weeks.

THE ONE-LINE TRUTH

The thyroid gland stops making enough hormone, so the whole body slows down—energy, warmth, digestion, heart rate, and mood all drop because every cell needs thyroid hormone to run at normal speed.

The chain — how it unfolds

1. The thyroid gland is damaged or destroyed, so it stops making enough thyroid hormone (T4 and T3). — why: This is the upstream break. In Hashimoto thyroiditis, antibodies attack the thyroid. In iodine deficiency, the thyroid lacks the building block it needs. In thyroidectomy or radioactive iodine treatment, the tissue is gone. Either way, thyroid hormone drops.
2. The pituitary gland senses the low thyroid hormone and releases huge amounts of TSH, trying to push the thyroid to work harder. — why: The pituitary's job is to keep thyroid hormone steady. When it sees T4 drop, it cranks up TSH—sometimes to 50, 100, or higher (normal is 0.5 to 5). If the thyroid is too damaged to respond, TSH stays high and T4 stays low. This is the lab signature of primary hypothyroidism.
3. Every cell in the body slows down because it doesn't have enough thyroid hormone to run at normal speed. You feel exhausted, cold, and sluggish. — why: Thyroid hormone tells the mitochondria (the cell's power plants) how fast to burn fuel and make energy (ATP, the energy currency of the cell). Without it, cells burn fuel slowly, so you make less energy and less heat. Your body temperature drops slightly, and you feel cold even in a warm room. Your muscles feel weak and tired because they can't make energy fast enough.
4. Weight goes up even though you're not eating more. — why: Your metabolism (the rate you burn calories) slows way down. Cells store extra calories as fat instead of burning them for energy. Fluid also builds up in tissues (myxedema), adding water weight.

5. Skin gets dry, thick, cool, and pale. The outer third of the eyebrows may thin or fall out. Hair becomes coarse, brittle, and falls out more than usual. — why: Thyroid hormone tells skin cells and hair follicles to grow and shed at a normal pace. Without it, the skin barrier weakens and loses moisture, so skin dries out. Hair follicles enter a resting phase and stop making new hair, so hair thins and falls out. Decreased blood flow to the skin (because the heart is pumping less and metabolism is slow) makes the skin look pale and feel cool.
6. The gut moves food very slowly, so constipation happens. You may only have a bowel movement every few days. — why: Thyroid hormone stimulates the gut's squeezing waves (peristalsis)—the wave-like muscle contractions that push food through the intestines. Without it, the smooth muscle in the gut barely squeezes, so stool sits in the colon for days, getting drier and harder.
7. The heart beats slowly (bradycardia, often 50 to 60 beats per minute). You may feel your heart pounding weakly or skipping. Blood pressure may drop slightly, and you feel dizzy when you stand up. — why: Thyroid hormone directly tells the sinoatrial node (the heart's pacemaker in the right atrium) to fire faster and tells heart muscle cells to contract harder. Without it, the heart rate drops, stroke volume (how much blood the heart pumps per beat) falls, and cardiac output (total blood pumped per minute) decreases. The heart can also swell slightly (dilated cardiomyopathy) and fill with fluid around it (pericardial a fluid collection (effusion)).
8. You feel sad, unmotivated, and mentally foggy. Memory gets worse, and thinking feels slow. Depression is very common. — why: Thyroid hormone helps regulate neurotransmitters in the brain—especially serotonin (the mood stabilizer that keeps feelings steady), norepinephrine (the alertness messenger that keeps you awake and focused), and dopamine (the motivation messenger that makes you want to do things). Low thyroid hormone means these neurotransmitters drop or don't work as well, so mood crashes and thinking slows. The prefrontal cortex (the front part of the brain that plans, focuses, and solves problems) also works less efficiently, causing brain fog and memory problems.

Spot it — what you see, and why

- Feeling tired all the time, even after sleeping: The thyroid gland (a small butterfly-shaped organ in your neck) makes hormones that set the speed for every cell in your body—like a throttle on an engine. When the thyroid doesn't make enough hormone, every cell slows down. Your mitochondria (the tiny power plants inside each cell that burn fuel to make energy) work more slowly, so you feel exhausted because your cells aren't making energy fast enough.

- Weight gain without eating more: Your metabolism (the rate your body burns fuel) slows down because thyroid hormone usually tells cells to burn calories faster. With less hormone, your body stores more calories as fat instead of burning them—like turning down the burner under a pot so it barely simmers.
- Feeling cold when others are comfortable: Thyroid hormone helps cells produce heat as they work. When levels drop, your cells make less heat, so you feel cold even in a warm room—like turning down the thermostat inside your body. Your skin blood vessels also constrict (narrow) to hold in warmth, making your hands and feet feel icy.
- Skin that feels dry and rough: Skin cells slow down their work and don't make enough natural oils (sebum) to keep skin soft. The outer layer of skin also renews itself more slowly, so dead cells pile up and make skin feel rough, flaky, and scaly—like paint that's peeling.
- Hair that falls out or thins, especially on the head and outer third of the eyebrows: Hair follicles (the tiny pockets where hair grows) need thyroid hormone to keep cycling through growth. When hormone levels drop, follicles pause and enter a resting phase too early, so more hairs fall out and fewer new ones grow back. Over time, hair becomes thin and brittle.
- Constipation (trouble having bowel movements): The muscles in your intestines squeeze food along in waves (called the gut's squeezing waves (peristalsis)). Thyroid hormone keeps these waves moving at a normal speed. With less hormone, the waves slow down—like a conveyor belt running in slow motion—so food and waste move through more slowly and become hard and dry.

Red flags — act now

- Chest pain, trouble breathing, or a very slow heart rate (below 50 beats per minute)—these can signal myxedema coma, a life-threatening emergency where the body shuts down from severe thyroid deficiency.
- Severe confusion, extreme sleepiness, or passing out—signs that brain function is dropping dangerously low and you need emergency care right away.
- Body temperature below 95°F (35°C, measured with a thermometer)—the body can't make enough heat, and this can lead to organ failure without urgent treatment.
- Sudden, severe swelling in the neck that makes it hard to swallow or breathe—this can mean bleeding into a goiter (swollen thyroid) or rapid growth that presses on the windpipe and blocks air.

Treat it — in this order

1. Levothyroxine (synthetic T4 hormone) 1.6 mcg per kilogram of body weight per day, or start 25–50 mcg daily if older than 65 or if heart disease is present, then titrate every 6–8 weeks by checking TSH until TSH is 0.5–2.5 mIU/L → Replaces the thyroid hormone the broken gland can no longer make. Levothyroxine is converted to T3 (triiodothyronine, the active form) inside cells, so metabolism speeds back up, the heart beats normally, skin and hair grow again, and fatigue lifts. This fixes the root problem—the missing hormone.
2. Check TSH and free T4 at 6–8 weeks after starting or changing the levothyroxine dose, then adjust the dose by 12.5–25 mcg increments until TSH stays in the normal range (0.5–2.5 mIU/L) → Ensures the replacement dose matches what the person's body actually needs. Too little levothyroxine leaves symptoms (fatigue, cold, constipation); too much causes hyperthyroid symptoms (tremor, racing heart, sweating, anxiety). Monitoring keeps the dose in the sweet spot.
3. Take levothyroxine on an empty stomach 30–60 minutes before breakfast, and separate it from calcium supplements, iron, antacids, and soy by at least 4 hours → Maximizes absorption of levothyroxine in the small intestine so it reaches the bloodstream. Calcium, iron, aluminum (in antacids), and soy bind to levothyroxine and block it from being absorbed—like clogging a straw.
4. In pregnancy, increase the levothyroxine dose by 25–30 percent as soon as pregnancy is confirmed, and check TSH every 4 weeks, aiming for TSH < 2.5 mIU/L in the first trimester and < 3.0 mIU/L in the second and third trimesters → Pregnancy increases thyroid hormone demand because the growing fetus needs thyroid hormone for brain development and the mother's blood volume expands. More levothyroxine keeps both mother's and baby's brains and metabolism working normally.
5. In older adults (over 65) or anyone with coronary artery disease or heart failure, start levothyroxine at 25 mcg daily and increase slowly (by 12.5–25 mcg every 4–6 weeks); accept a slightly higher TSH goal (up to 5–10 mIU/L) if symptoms improve and the heart stays stable → Prevents sudden thyroid hormone surges from triggering angina (chest pain from blocked heart arteries), atrial fibrillation (an irregular, quivering heartbeat) (chaotic, fast heart rhythm), or heart attack. A slow ramp-up lets the heart adjust gradually without being overwhelmed.

Your top priorities at the bedside

1. Monitor vital signs every 4 hours, especially heart rate and body temperature — why: Low thyroid hormone slows the heart causing a slow heart rate (bradycardia) (under 60 beats per minute) and drops body temperature below 97 degrees Fahrenheit; severe drops signal myxedema coma which needs ICU care

2. Assess mental status and level of consciousness every shift using Glasgow Coma Scale or AVPU method — why: Severe hypothyroidism causes brain swelling and decreased oxygen use by brain cells leading to confusion, slow thinking, or coma; worsening mental status is an emergency requiring immediate physician notification
3. Teach patient to take levothyroxine on empty stomach 30 to 60 minutes before breakfast with full glass of water — why: Food reduces levothyroxine absorption in the small intestine by 40 percent; consistent timing on empty stomach ensures steady blood levels and proper TSH (thyroid stimulating hormone) control