



Hypothyroidism

Outpatient diagnosis and replacement · TSH is the test, absorption is the usual problem, and adrenal insufficiency is checked first

Recheck at
6 to 8 weeks

⚠ TWO THINGS TO SETTLE BEFORE YOU PRESCRIBE

1. If adrenal insufficiency is possible, treat it FIRST. Starting levothyroxine in untreated adrenal insufficiency raises cortisol clearance and can **precipitate an adrenal crisis**. Suspect it with hyponatremia, hypotension, hyperpigmentation, or when a pituitary cause is in play, and give glucocorticoid before thyroid hormone. **2. Do not diagnose hypothyroidism from thyroid tests taken during acute illness.** **Non-thyroidal illness (sick euthyroid) syndrome** lowers T3, then T4, and TSH moves unpredictably including a rebound rise during recovery. **Repeat once the patient is well**, unless myxedema coma is genuinely suspected.

RECOGNIZE IT *the symptoms are nonspecific, so know which findings carry weight*

SYMPTOMS, LOW SPECIFICITY

Fatigue, cold intolerance, weight gain, constipation, dry skin, hair thinning, low mood, poor concentration, menorrhagia, muscle cramps. **Every one of these is common in euthyroid people**, which is why the diagnosis is biochemical and why treating symptoms with a normal TSH does not work.

SIGNS THAT CARRY MORE WEIGHT

Delayed relaxation phase of the ankle reflex, bradycardia, **non-pitting periorbital and peripheral edema**, hoarseness, goiter, and **loss of the outer third of the eyebrows**. Also **hyponatremia, raised creatine kinase, macrocytic anemia and hyperlipidemia** as incidental laboratory clues.

WHO TO TEST

Test on clinical suspicion rather than screening everyone. Have a low threshold with **another autoimmune disease** (type 1 diabetes, celiac, vitiligo, Addison), a family history, **prior neck irradiation or thyroid surgery**, the drugs listed below, **new atrial fibrillation or unexplained heart failure**, infertility, and unexplained hyperlipidemia or hyponatremia.

DIAGNOSE IT *and know which number to follow*

Pattern	Interpretation
High TSH, low free T4	Overt primary hypothyroidism. Treat. In the US the commonest cause is Hashimoto (chronic autoimmune) thyroiditis ; TPO antibodies confirm the cause but do not change the treatment , so they are optional once the picture is clear
High TSH, normal free T4	Subclinical hypothyroidism. See the threshold section below, since this is where most of the overtreatment happens
⚠ LOW or normal TSH with low free T4	Central (secondary) hypothyroidism from pituitary or hypothalamic disease. The critical consequence: TSH is useless for monitoring here, so titrate on free T4 , aiming for the mid to upper reference range. Look for other pituitary deficits, and again replace cortisol before thyroxine
Other causes worth naming	Post-surgical and post-radioiodine, external beam radiation to the neck, and drugs: amiodarone, lithium, checkpoint inhibitors, tyrosine kinase inhibitors and interferon . Transient hypothyroidism follows the thyrotoxic phase of thyroiditis and often needs no long-term treatment

TREAT IT *one drug, and the details are all about absorption*

Step	Detail
Full replacement dose	Levothyroxine roughly 1.6 micrograms/kg/day using ideal body weight, for a young, healthy patient with overt disease and no residual thyroid function
⚠ Start low in the vulnerable	Start at 12.5 to 25 micrograms daily in older adults, in coronary artery disease, and in longstanding severe hypothyroidism , then titrate slowly. A full dose in these patients can precipitate angina, arrhythmia or infarction , because you are abruptly raising myocardial oxygen demand
How to take it	Once daily on an empty stomach, 30 to 60 minutes before breakfast , or at bedtime at least 3 hours after eating. Consistency matters more than which option. Take it with water, not coffee
⚠ Separate the binders by 4 hours	Calcium, iron, multivitamins, magnesium, aluminum-containing antacids, sucralfate, cholestyramine and bile acid sequestrants all bind levothyroxine in the gut. This is the commonest reason a stable patient becomes uncontrolled , and it is fixed by timing rather than by raising the dose
Recheck the TSH at 6 to 8 weeks	After starting and after every dose change , because TSH takes that long to re-equilibrate. Checking earlier produces a misleading number and a wrong dose adjustment. Once stable, annually. Target the reference range, and consider the upper part of the range in older adults

SUBCLINICAL HYPOTHYROIDISM *the commonest place to over-treat*

TSH ABOVE 10

Treatment is generally recommended, since the risk of progression to overt disease is high. **Confirm it is persistent** with a repeat after several weeks before committing anyone to lifelong therapy, because a single raised TSH is often transient.

TSH BETWEEN THE UPPER LIMIT AND 10

Individualize. Favors a trial: **symptoms, positive TPO antibodies, goiter, younger age**, and planning pregnancy. Favors observation: **older age, no symptoms, mildly raised TSH. TSH rises normally with age**, so an older patient may not be abnormal at all.

IF YOU TREAT, JUDGE IT HONESTLY

Set a symptom endpoint before starting, and if a trial of therapy that normalizes the TSH does not improve symptoms, **stop it rather than escalating**. Trial evidence in older adults has not shown symptomatic benefit, so treating a number alone exposes the patient to harm without gain.

WHEN THE TSH WILL NOT COME DOWN *work this list before increasing the dose again*

- Adherence first, and ask without judgment.** Missed doses are the commonest cause by far. **Weekly directly observed dosing** is an option in genuinely difficult cases. Then check **timing and the binders above**, which is the second commonest cause.
- Then malabsorption:** celiac disease, atrophic gastritis, **Helicobacter pylori**, and bariatric surgery all reduce absorption. Also consider **proton pump inhibitors**. A liquid or soft-gel formulation can help where absorption is genuinely impaired.
- Increased requirement:** pregnancy, **estrogen therapy** (raises thyroxine-binding globulin), and drugs that increase clearance such as **phenytoin, carbamazepine and rifampin**. Requirement falls with age and with weight loss.
- Combination T4 plus T3 is not routinely recommended**, and desiccated thyroid extract is not recommended: neither has shown consistent benefit, and both give unphysiological T3 peaks. **Before attributing persistent symptoms to the thyroid, look for anemia, depression, sleep apnea, celiac disease and vitamin D deficiency**, which are common and separately treatable.

