Hyperthyroidism & Graves' Disease

Find the cause before you treat it · thyroiditis is not treated with antithyroid drugs, and TSH is useless for early monitoring

Uptake or TRAb
before treatment

ESTABLISH THE CAUSE FIRST *this single step decides everything that follows*

Category	Causes	How you know
HIGH uptake *the gland is overproducing*	**Graves' disease** (commonest), **toxic multinodular goiter**, **toxic adenoma**	**Radioactive iodine uptake and scan**: diffuse uptake in Graves, patchy in a multinodular goiter, a single hot nodule in an adenoma. **TRAb (or TSI) is positive in Graves** and is often enough on its own when there is orbitopathy or a diffuse goiter, avoiding the scan entirely
LOW uptake *preformed hormone is leaking, or coming from outside*	**Thyroiditis** (subacute painful, painless, post-viral), **exogenous thyroid hormone**, iodine load including **contrast and amiodarone**, and struma ovarii	Low uptake on scan. **Thyroglobulin is LOW in exogenous (factitious) thyrotoxicosis and high in thyroiditis**, which is the way to separate those two
⚠ Why this matters	**Thyroiditis must NOT be treated with antithyroid drugs.** The gland is not making excess hormone, it is leaking stored hormone, so methimazole does nothing. It is **self-limited**: treat symptoms with a **beta-blocker**, add NSAIDs or a short steroid course for pain in subacute thyroiditis, and expect a **transient hypothyroid phase** before recovery. **Treating thyroiditis with a thionamide is the classic error this sheet exists to prevent**	

RECOGNIZE IT *and the two findings that are specific to Graves rather than to thyrotoxicosis*

THYROTOXICOSIS, ANY CAUSE

Weight loss with preserved or increased appetite, heat intolerance, sweating, palpitations, tremor, anxiety, insomnia, frequent stools, proximal muscle weakness, and **oligomenorrhea**. **Atrial fibrillation and a wide pulse pressure** are the cardiac signatures.

SPECIFIC TO GRAVES

Orbitopathy (proptosis, lid retraction, periorbital edema, diplopia) and **pretibial myxedema**, plus thyroid acropachy. **These are extrathyroidal autoimmune features, so their presence effectively makes the diagnosis** and can remove the need for an uptake scan. A **diffuse goiter with a bruit** also points to Graves.

ASK ABOUT IODINE AND DRUGS

Recent CT contrast, amiodarone, or iodine-containing supplements can precipitate thyrotoxicosis and will also **make an uptake scan uninterpretable for weeks**. Ask before ordering the scan. Also ask directly about **weight-loss preparations and thyroid hormone taken deliberately**.

TREATING GRAVES' DISEASE *three definitive options, chosen by patient factors*

Option	How it is used	Choose it when, and watch for
Antithyroid drug *methimazole*	**Methimazole is first-line**, dosed by severity, usually for **12 to 18 months** then a trial of withdrawal	Best for milder disease, small goiter, and where remission is plausible. **Roughly half remain in remission after withdrawal**, and a **persistently high TRAb at the end of treatment predicts relapse**, so measure it before stopping
Radioactive iodine	A single oral dose, with hypothyroidism as the expected and intended outcome	Definitive and avoids surgery. **Contraindicated in pregnancy and breastfeeding**, and it **can worsen Graves' orbitopathy**, particularly in smokers, so avoid or cover with steroid in active eye disease. Expect a transient rise in hormone levels early
Surgery *total thyroidectomy*	Rendered euthyroid beforehand where possible	Preferred with a **large compressive goiter, suspected malignancy, coexisting hyperparathyroidism, moderate to severe orbitopathy**, or when rapid definitive control is needed. Risks are **hypoparathyroidism and recurrent laryngeal nerve injury**, and lifelong levothyroxine is certain
Beta-blocker for everyone	**Propranolol or atenolol** while awaiting definitive control	Treats tremor, palpitations, anxiety and heat intolerance. It does **not** treat the thyrotoxicosis itself, so it is an adjunct rather than a plan

DRUG SAFETY & MONITORING *the two counseling points and the one monitoring trap*

Issue	Detail
⚠ Agranulocytosis	Rare but potentially fatal, and usually in the first months. **Tell every patient explicitly: stop the drug and get an urgent white cell count for fever, sore throat or mouth ulcers.** Routine monitoring does not reliably catch it because onset is abrupt, which is why the counseling matters more than the schedule. Check a baseline CBC and LFTs before starting
⚠ Hepatotoxicity	**Propylthiouracil carries a boxed warning for severe hepatic failure**, which is why **methimazole is first-line**. Methimazole can cause a cholestatic picture. Warn about jaundice, dark urine and right upper quadrant pain
When PTU is still used	Reserved for **thyroid storm**, methimazole intolerance, and **the first trimester of pregnancy**, where methimazole carries a teratogenic risk. Outside those situations, use methimazole
⚠ Do not monitor with TSH early	**TSH remains suppressed for months after the patient is biochemically euthyroid**, because the pituitary is slow to recover. **Titrate on free T4 and total or free T3** for the first several months. Following the TSH instead leads to overtreatment and iatrogenic hypothyroidism, which is the commonest monitoring error in this disease
Amiodarone-induced thyrotoxicosis	Two types with different treatments: **type 1** is iodine-driven excess synthesis in an abnormal gland and responds to thionamides; **type 2** is a destructive thyroiditis and responds to **steroids**. They overlap and are genuinely hard to separate, so **involve endocrinology early** rather than guessing

GRAVES' ORBITOPATHY & PEARLS

- **Smoking is the strongest modifiable risk factor for orbitopathy**, and it worsens both the eye disease and its response to treatment. **Cessation advice is a specific therapeutic act here**, not general health advice, and it should be documented at every visit. Selenium is used in mild disease, and **teprotumumab and steroids** are options in moderate to severe active disease.
- **Refer urgently for any sign of sight-threatening disease:** reduced acuity, **loss of color vision**, corneal exposure or ulceration, or optic neuropathy. **The eye disease runs a course independent of the thyroid biochemistry**, so a euthyroid patient can still be losing vision.
- **Apathetic thyrotoxicosis is the presentation that gets missed.** In older adults it can appear as **atrial fibrillation, weight loss, depression or heart failure without any of the classic hyperadrenergic features**. **Check a TSH in new atrial fibrillation and in unexplained weight loss.**
- **Subclinical hyperthyroidism is not benign.** A persistently suppressed TSH with normal hormones raises the risk of **atrial fibrillation and osteoporosis**, so treatment is generally recommended when TSH is persistently below 0.1, and considered in older patients or those with cardiac disease or osteoporosis at lesser degrees.

Scope note: this sheet covers **non-pregnant adults**. **Preconception, pregnancy and postpartum management differs and follows the ATA 2026 guideline on thyroid disease in preconception, pregnancy and postpartum**, which replaced the 2017 guideline, including the criteria for stopping antithyroid drugs; consult it directly. **Thyroid storm is covered on the Thyroid Emergencies sheet. References:** ATA guidelines for the diagnosis and management of hyperthyroidism and other causes of thyrotoxicosis · EUGOGO guidance on Graves' orbitopathy.

Educational aid; verify against current guidance, local formulary and patient factors.