

Requesting Thyroid Function Tests (TFTs)

The thyroid gland produces, stores, and secretes thyroxine (T4) and triiodothyronine (T3) through a negative feedback process involving the hypothalamus and pituitary gland. Thyroid dysfunction can result when any part of this process is affected, and is usually characterised by the presence of abnormal levels of free T4, free T3 and thyroid-stimulating hormone (TSH), which is secreted by the pituitary gland.

More information is available from the British Thyroid Association: <http://www.british-thyroid-association.org>

TSH only is recommended as the first line test for screening for thyroid disease.

The lab will add FT4, FT3 and / or TPO antibodies when indicated.

TSH only is required for monitoring patients on thyroxine replacement for primary hypothyroidism.

TSH with FT4 is only required:

- when stabilising treatment of thyroid dysfunction (hyper- or hypo-thyroidism)
- in pregnancy
- in patients with goitre
- in monitoring of secondary hypothyroidism

Avoid requesting TFTs in **acutely ill patient or inpatients**. Check thyroid status 6-8 weeks after recovery from an illness.

Laboratory software rejects repeat requests for TFTs within 21 days. If results are relevant to the current clinical condition (e.g recent commencement of treatment for thyrotoxicosis) please contact Duty Biochemist on 01904 72 6366 / x(772) 6366.

Thyroid receptor antibody is valuable only in hyperthyroid patients.

Annual **thyroglobulin** monitoring is useful only in patients with history of thyroid cancer.

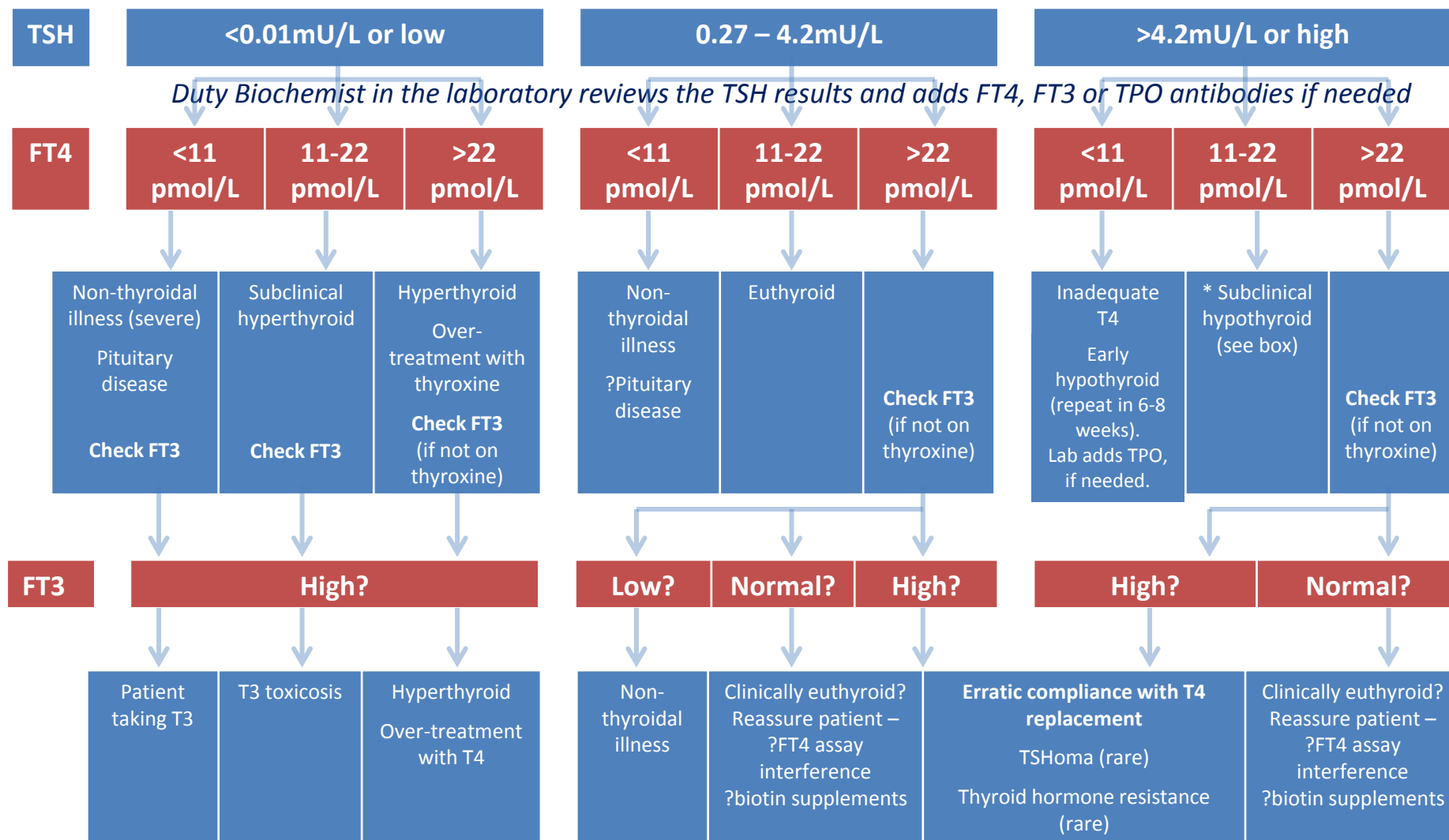
Concomitant **drug therapy** with amiodarone, lithium, beta blocker, steroids, NSAIDs and anti-epileptics can interfere with thyroid hormone production and binding with transport proteins (e.g thyroid binding globulin).

The reference range for TFTs varies slightly depending on the analysers used in different laboratories. York Hospitals NHS Trust use Roche analysers.

	Ref. range	In pregnancy		
		1 st trimester	2 nd trimester	3 rd trimester
TSH (mU/L)	0.27 – 4.20	0.33 – 4.6	0.35 – 4.1	0.21 – 3.2
FT4 (pmol/L)	11 – 22	12 - 20	10 - 17	8 – 16
FT3 (pmol/L)	3.1 – 6.8 (>20y) 3.9 – 7.7 (12 – 20y)	3.8 – 6.0	3.2 – 5.5	3.1 – 5.0

Interpreting Thyroid Function Tests (TFTs)

(This pathway is not appropriate if the patient is pregnant or if taking amiodarone/ lithium)



High dose biotin supplements can interfere with TSH and FT4 measurement. For details: <https://tinyurl.com/BiochemInfo>

* Treatment with levothyroxine not recommended if TSH is 4.2-10mU/L. (exceptions: pregnancy, adults <30 years, presence of severe symptoms)
Reference: BMJ 2019;365:l2006