

Abnormal TFT Results Guidance

This guidance has been developed from published guidance, in collaboration with local Endocrinologists, in response to frequently asked questions on interpreting TFTs.

This guidance is to assist GPs in decision making and is not intended to replace clinical judgment.

Abnormal Thyroid Function Tests

TSH high	T4 normal	T3 normal	Subclinical hypothyroidism
TSH high	T4 low	T3 low or normal	Hypothyroidism
TSH low	T4 normal	T3 normal	Subclinical hyperthyroidism
TSH low	T4 high/normal	T3 high/normal	Hyperthyroidism (unless on T4 treatment)
TSH low	T4 low/normal	T3 low/normal	Non-thyroidal illness (rarely secondary hypothyroidism)

Thyroid dysfunction in pregnancy / postpartum

TSH

Pulsatile release, peaks during night
Takes 4-6wks for TSH to reflect circulating thyroid hormone levels

Abnormal TSH can persist for several months after achieving clinical euthyroid

Following thyroxine replacement wait 6-8wks before measuring TSH
After treating hyperthyroid wait 3mths

If on thyroxine treatment, ↓TSH, ↑T4 can also be:
Over replacement in 1° hypothyroidism

Expected in 2° hypothyroidism (after surgery, radiotherapy) - discuss

[British Thyroid Foundation Patient Information](#)

Who to test

Symptoms? Suspected goitre?
AF, Dyslipidaemia, Osteoporosis, Subfertility, Type 1 Diabetes

Check TFT annually:

Down / Turner syndrome
Previous postpartum thyroiditis
Previous neck irradiation

Healthy populations – no evidence for screening
Target case-finding in individuals with symptoms

NB Congenital hypothyroidism
Incidence 1:4000

Commonest treatable cause mental retardation
UK national screening programme but not done worldwide

Drugs affecting thyroid hormones:

Lithium ↓ 6mthly TSH
Amiodarone can ↑ or ↓ 6mthly TSH, T3, T4
Estrogens can ↓ T4 (by ↑TBG)
Androgens, Corticosteroids can ↑ T4 (↓TBG)
Methadone can ↑ T3, T4

Nodules & Multinodular Goitre

Patients with a thyroid nodule or a multinodular goitre who have normal TFTs may have thyroid cancer and must be referred to a specialist for further evaluation / consideration of FNA

References

[UK Guidelines for the Use of Thyroid Function Tests](#) British Thyroid Association 2006

Refer to current BNF or Summary of Product Characteristics for full medicines information
Comments & enquiries relating to medication: NHS Camden Medicines Management Team
mmt.camdenccg@nhs.net

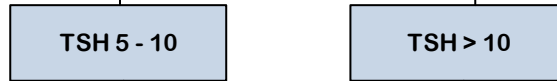
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Pathway Created by Alex Warner & Sarah Morgan March 2013
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Hypothyroidism

Prevalence 1-2%
10:1 female:male

Indications for T4 replacement	
Asymptomatic	TSH > 10
Symptomatic	TSH > 5
Pregnant/TTC	TSH >5
Goitre	TSH >5



No symptoms Symptoms FT4 Normal or Low

Subclinical hypothyroidism
Prevalence 1.3-17.5%
Asymptomatic
Normal T3,T4

Repeat 3 - 6mths after excluding non-thyroidal illness or drug effect

Treat if any cardiac disease, >60 or osteoporosis

Otherwise, could consider trial of treatment on individual patient basis

Check TPO Antibodies

Treat with Levothyroxine

Start at 50-100mcg OD then in 25-50mcg increments increasing every 3-4 weeks
Maintenance dose 100-200mcg OD

If older (eg. >50) or IHD consider commencing at 25mcg OD to avoid cardiac complications
Maintenance dose 50-200mcg OD

Titrate Levothyroxine against TSH whilst assessing clinical wellbeing
Monitor TSH & FT4 every 8wks until within reference range (FT4 may be slightly above ref range)

Then annually or if develops symptoms

TPO Antibodies Raised TPO Antibodies Normal

5% per year become hypothyroid
Monitor TSH annually

Monitor TSH every 3 years

<p>Symptoms non-specific</p> <p>Dry skin Brittle hair Weight gain Tiredness Constipation Muscle aches Bradycardia Cold intolerance Depression Memory Loss Menorrhagia Hoarseness</p>	<p>Results in hypothyroidism</p> <p>↑TSH, ↓fT4 TPO Antibody +/-</p> <p>↓B12 so ↑MCV ↑LDL, Cholesterol ↓Na</p>
<p>Causes of Hypothyroidism</p> <p>99% Primary, <1% deficiency Chronic autoimmune Eg. Hashimoto's thyroiditis Most common, Goitre, Anti TPO abs 90%, Anti thyroglobulin abs 20-55%</p> <p>Destructive treatment for hyperthyroidism</p> <p>Postpartum</p>	<p>Secondary hypothyroidism</p> <p>Low T4 TSH low, normal or slightly raised</p> <p>Refer these patients</p> <p>Can differentiate from non-thyroid causes by history, TSH/FT4/FT3 + other anterior pituitary tests</p> <p>9am cortisol needs to be >200nmol/l before thyroxine replacement</p>

Hypothyroidism - Who to refer?

Unresponsive to therapy
TSH not in normal range despite ≥ 200mcg of Levothyroxine *and* compliant with treatment, or Symptoms continue despite apparently adequate thyroid replacement

Age under 16yrs, **Pregnant or postpartum**
Undergoing fertility investigation / treatment
Presence of nodular goitre, Other pituitary disease,
Others where specialist input on management helpful
Eg. IHD, drug treatment with Amiodarone, Lithium

Hyperthyroidism
0.5-2% women
10:1 female:male

Hyperthyroidism
Warm moist skin
Hair loss
Weight loss
Nervousness
Increased bowel movement
Muscle weakness
Tachycardia
Heat intolerance
Insomnia
Difficulty concentrating
Light/absent periods

Results in hyperthyroidism
↑↑ fT4 or fT3
↓↓TSH

↓Hb (normocytic)
Mild leukopenia
↑ESR
↑LFT / ALP
↑Ca2+
↓Albumin
↓Cholesterol

Causes of Hyperthyroidism
99% Primary

Graves disease
most common cause.
Anti-TSH antibodies +ve in 80%
Toxic nodular disease
single or multiple nodules, usually older age group
T3 thyrotoxicosis (5%)
clinically hyperthyroid but normal fT4

NB Atrial Fibrillation (5-10%)
Osteoporosis risk
Subfertility

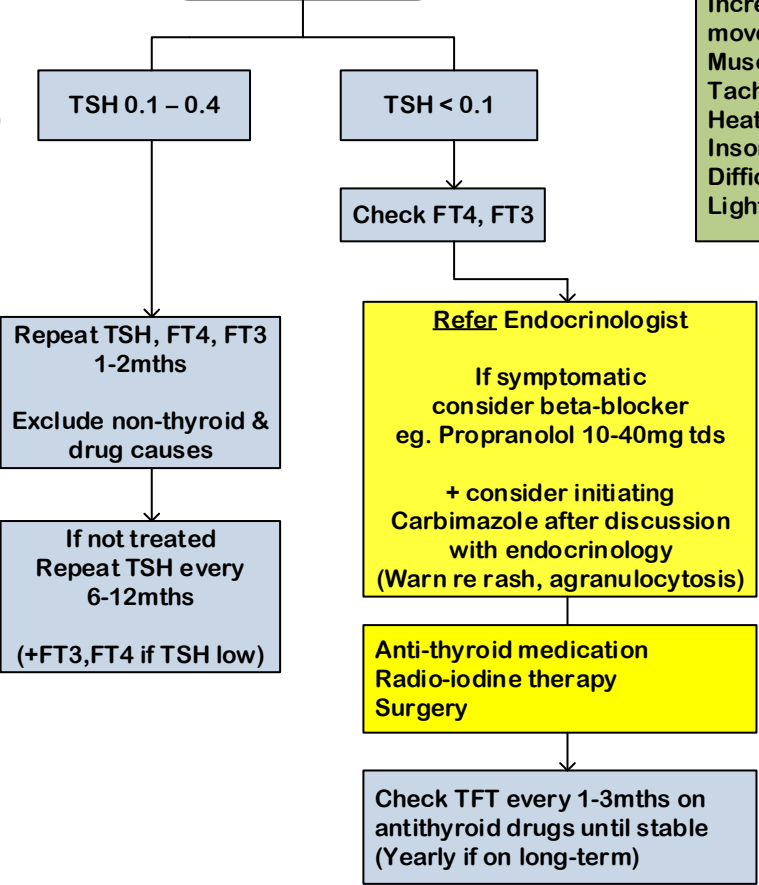
Non-thyroidal causes

Thyroid changes during systemic illness in absence of intrinsic thyroid disease
Acute, reversible
Common after surgery, starvation, many febrile illnesses

Usually ↓fT3, fT4
Any abnormal levels possible
TSH either slight ↓(0.1-0.3mU/L) or ↑(5-20mU/L)

Occurs 15% of hospitalised patients (non-thyroid illness / drugs)
2% have TSH <0.1mU/L or >20mU/L but less than half have underlying thyroid disorder

(Not on thyroxine)



Undetected subclinical hypothyroidism during pregnancy may adversely affect neuropsychological development & survival of fetus

Associated ovulatory dysfunction + infertility

Thyroid dysfunction in pregnancy

Hypothyroidism in pregnancy

Ideally measure TSH, FT4:
Pre-conception
At diagnosis pregnancy
At Antenatal booking
At least once in 2nd, 3rd trimesters
2-4 weeks postpartum

Dose increase usually required

May need to increase Levothyroxine dose by at least 50mcg daily to maintain TSH 0.4 – 2.0 and FT4 in upper reference range
Maintenance dose 100-200mcg OD

Recheck TFT 2-4wks postpartum

Dose can usually be reduced to previous

Thyroid function in pregnancy

↓TSH normal 1st trimester (if FT4 normal)

3 factors affect thyroid function in pregnancy
-Transient ↑HCG in 1st trimester can stimulate TSH receptors -> Gestational transient thyrotoxicosis, Hyperemesis Gravidarum

-Oestrogen induced ↑TBG – 1st trimester sustained during pregnancy affecting FT4, FT3

-Alterations in immune function – onset, exacerbation or improvement underlying autoimmune thyroid dysfunction

Women with hyperthyroidism should be seen by a specialist

May be switched from Carbimazole to PTU (possible risk congenital defects with Carbimazole, lowest possible dose of PTU is used)

Will require frequent TFT monitoring

Significant risk recurrent postpartum, check TFT 2-4wks

Postpartum thyroiditis in 5-10% women

If past history, screen prior to pregnancy and 6-8wks postpartum + offer annual TSH check

Women with Type 1 Diabetes 3x risk of postpartum thyroid dysfunction, should have TFT & TP ab status preconception, booking, 3mths postpartum