

# A Quick Reference Guide for Use of Thyroid Function Tests in Primary Care

## Authors

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## Scope

The guideline aims to provide guidance regarding appropriate use of Thyroid Function Testing (TFTs) in adults in Primary Care. The guideline applies to adults (greater than 16 years) and does not apply to preconception / pregnancy monitoring or children.

## Key recommendations

Recommendations are grouped under the following headings:

1. Use of TFTs when Thyroid Dysfunction is suspected
2. Discordant TFTs
3. Use of TFTs for Primary Hypothyroidism Monitoring
4. Use of TFTs in Secondary Hypothyroidism
5. Use of TFTs for Hyperthyroidism Monitoring
6. Use of TFTs to monitor subclinical hypothyroidism in adults
7. Use of TFTs to monitor subclinical hyperthyroidism in adults

## Process of development and review

The guideline was developed by Dr. Gerard Boran, in collaboration with Dr. Niamh Moran, ICGP in response to a request from the ICGP. The guideline was reviewed by the Quality in Practice Committee of the ICGP, Dr. Anne McGowan, Dr. Mark Sherlock, and Dr. James Gibney and feedback was incorporated.

## 1. Use of TFTs when Thyroid Dysfunction is suspected

<b>1 When to test</b>	<ul style="list-style-type: none"> <li>• <b>Symptoms suggestive of Hypothyroidism</b> Especially in women of menopausal age (or &gt; 50 years old<sup>1,2,3</sup>).  Symptoms are often nonspecific and include weight gain, fatigue, poor concentration, depression, diffuse muscle pain, and menstrual irregularities. Symptoms with a higher specificity for hypothyroidism include constipation, cold intolerance, dry skin, proximal muscle weakness, and hair thinning or loss.<sup>4</sup></li> <li>• <b>Hyperthyroid symptoms</b> Symptoms include heat intolerance, palpitations, anxiety, fatigue, weight loss, muscle weakness, and menstrual irregularities. Clinical signs may include tremor, tachycardia or atrial fibrillation, lid lag, and warm moist skin.</li> </ul>
<b>2 When not to test</b>	<ul style="list-style-type: none"> <li>• Healthy asymptomatic individuals under 50.</li> <li>• <i>Screening for thyroid dysfunction in a healthy adult population is not warranted.</i><sup>3</sup></li> </ul>
<b>3 When to re-test in healthy individuals with previously normal TFTS</b>	<ul style="list-style-type: none"> <li>• Not less than 3 years since a previous normal test in healthy asymptomatic individuals.<sup>5</sup></li> </ul>
<b>4 When not to do imaging</b>	<ul style="list-style-type: none"> <li>• Don't routinely order a thyroid ultrasound in patients with abnormal thyroid function tests if there is no palpable abnormality of the thyroid gland.<sup>6</sup></li> </ul>

## 2. Discordant TFTs

<b>5 T4 High or T4 Low in the presence of a normal TSH in a patient with suspected thyroid dysfunction</b>	<ul style="list-style-type: none"> <li>• Discuss these cases with your local laboratory consultant or endocrinologist before commencing any treatment. This is because further laboratory and / or endocrinologist evaluation is usually necessary.</li> </ul>
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## 3. Use of TFTs for PRIMARY Hypothyroidism Monitoring

<b>6 When to test</b>	<ul style="list-style-type: none"> <li>• Check TFTs annually in patients stabilised on long-term T4 therapy.<sup>3</sup></li> </ul>
<b>7 When not to test</b>	<ul style="list-style-type: none"> <li>• Don't check TFTs in a stable patient more often than annually.<sup>3</sup></li> <li>• After a change in thyroxine dosage, do not re-check TFTs for at least 3 months.</li> </ul> <p>In stable patients, there may be no need to alter thyroxine dosage for very minor abnormalities in TFTs. Instead enquire about non-compliance and whether there was an intercurrent illness.<sup>3</sup></p>
<b>8 When to test for Thyroid Peroxidase Autoantibodies (TPO Ab)</b>	<ul style="list-style-type: none"> <li>• Measure TPO Ab on one occasion for diagnosis of autoimmune thyroiditis, but not for monitoring.</li> </ul>
<b>9 When NOT to test for TPO Ab</b>	<ul style="list-style-type: none"> <li>• Do not test for TPO Ab when the TFTs are normal.</li> </ul>
<b>10 When not to order T3 levels</b>	<ul style="list-style-type: none"> <li>• Don't order a total T3 or free T3 level when assessing T4 therapy in hypothyroid patients.<sup>6</sup></li> </ul>

#### 4. Use of TFTs in SECONDARY Hypothyroidism.

<b>11 Suspected new cases</b>	<ul style="list-style-type: none"> <li>• Please discuss these cases with your local laboratory consultant or endocrinologist before commencing any treatment. This is because further endocrinologist and / or laboratory evaluation is usually necessary.</li> </ul>
<b>12 Maintenance</b>	<ul style="list-style-type: none"> <li>• Perform annual TFTs in patients stabilised on Thyroxine therapy. These patients should be under endocrinologist review.</li> <li>* Note in patients with secondary hypothyroidism due to pituitary disease the TSH level should NOT be used to guide treatment (as it is often low) and therefore the Free T4 level should be used.</li> </ul>

#### 5. Use of TFTs for Hyperthyroidism Monitoring

<b>13 Monitoring Neomercazole therapy</b>	<ul style="list-style-type: none"> <li>• Perform TFTs every 4-6 weeks after commencement, and at 3 month intervals once maintenance dose is reached.<sup>3</sup></li> </ul>
<b>14 Monitoring after Radioactive iodine (RAI) or thyroidectomy treatment in Graves Disease*</b>	<ul style="list-style-type: none"> <li>• Follow-up in first 1-2 months after RAI treatment.<sup>6</sup></li> <li>• If patient remains thyrotoxic then recheck TFTs at 4-6 week intervals.</li> <li>• Following thyroidectomy for Graves disease (and commencement of T4 therapy), measure TFTs 6-8 weeks post-operatively.<sup>3</sup></li> <li>• In either case: once stabilised, reduce frequency of testing to 3-monthly for one year and then annually for life.</li> <li>*Note these patients are usually under the care of an endocrinologist so this section is provided for information only.</li> </ul>
<b>15 Monitoring after RAI or surgical treatment in Toxic Multinodular Goitre and Toxic Adenoma*</b>	<ul style="list-style-type: none"> <li>• Follow-up in first 1-2 months after RAI treatment for Toxic Multinodular Goitre. Repeat TFTs at 1-2 month intervals until stable, and then annually.<sup>6</sup></li> <li>• Following surgery for toxic multinodular goitre and start of thyroxine therapy, TSH should be measured 1-2 monthly until stable and annually thereafter.</li> <li>• Following surgery for toxic adenoma TSH and Free T4 levels should be obtained 4-6 weeks post operatively.<sup>3</sup></li> <li>• In either case: once stabilised, reduce frequency of testing to 3-monthly for one year and then annually for life.</li> <li>* Note these patients are usually under the care of an endocrinologist so this section is provided for information only.</li> </ul>

#### 6. Use of TFTs to Monitor Subclinical Hypothyroidism

<b>16 Definition of Subclinical Hypothyroidism</b>	TSH above the defined upper limit of the reference interval, with a serum free T4 within the reference interval. Patients have few or no symptoms. Pattern should be confirmed on two occasions 3-6 months apart.
<b>17 When to test</b>	<ul style="list-style-type: none"> <li>• Patients with subclinical hypothyroidism should have the pattern confirmed within 3-6 months to exclude transient causes of elevated TSH.<sup>3</sup> <i>If treatment is initiated see Use of TFTs for primary hypothyroidism monitoring.</i></li> <li>• Patients with subclinical hypothyroidism who are TPO Ab positive should have TFTs checked annually.</li> <li>• Patients with subclinical hypothyroidism who are TPO Ab negative should have TFTs checked every 3 years.</li> </ul>

## 7. Use of TFTs to Monitor Subclinical Hyperthyroidism in adults

<b>18 Definition of Subclinical Hypothyroidism</b>	Low or undetectable serum TSH levels, with normal free T4 and total or free T3 levels.
<b>19 When to test</b>	<ul style="list-style-type: none"> <li>• These cases should be discussed with the local laboratory consultant or endocrinologist to decide a monitoring/treatment plan.<sup>3</sup></li> </ul> <p><i>If treatment is initiated see Use of TFTs for hyperthyroidism monitoring.</i></p> <p>If treatment not undertaken then check TFTs every 6-12 months.</p>

### References

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2. Biondi B, Wartofsky L. Treatment with thyroid hormone. *Endocrine Reviews*, 2014 June; 35(3):433-512.
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4. Helfand M; Screening for subclinical thyroid dysfunction in nonpregnant adults: a summary of the evidence for the U.S. preventive services task force. *Ann Intern Med.* 2004 Jan 20;140(2):128-41.
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6. Choosing wisely - AACE and The Endocrine Society: <http://www.choosingwisely.org/doctor-patient-lists/the-endocrine-society-and-american-association-of-clinical-endocrinologists/>.