

## Patient Information

### Thyroid Testing

The thyroid gland is part of the endocrine system and is responsible for controlling the metabolic rate (or pace) of all the processes in the body. If there is a deficiency of circulating thyroid hormones, thyroxine (T4) and triiodothyronine (T3), every function of the body tends to slow down. Conversely if there is over production of thyroid hormones, the metabolic rate speeds up.

**Hypothyroidism (under active)** may be congenital but usually occurs in later life. The most common causes of hypothyroidism are an autoimmune condition called Hashimoto's thyroiditis or radioiodine or drug treatment of hyperthyroidism, which can eventually deplete thyroid hormone production so much that hypothyroidism results. Hypothyroidism can also be caused by a dysfunction of the hypothalamus (part of the brain) or the pituitary gland, both of which are involved in the control of the thyroid gland. Hypothyroidism can be caused by a lack of dietary iodine or other supporting nutrients. It may also be associated with increased stress, including environmental stress and stress caused by imbalances in the body, such as blood sugar imbalances and immune problems.

**Hyperthyroidism (over active)** is most commonly caused by an autoimmune disease known as Graves' disease, a hyperplasia and hypertrophy (an increase in the number and size of cells) of the thyroid gland. Hyperthyroidism may be hereditary, caused by emotional stress or unknown factors.

The symptoms of **hypothyroidism (under active)** and **hyperthyroidism (over active)** may seem like opposites of each other, but in reality a number of symptoms cross over and different sets of symptoms manifest in different individuals.

Hypothyroid Symptoms	Hyperthyroid Symptoms
<ul style="list-style-type: none"> <li>• fatigue, low energy</li> <li>• cold intolerance</li> <li>• weight gain</li> <li>• constipation</li> <li>• hair loss, dry skin/hair/ nails</li> <li>• depression</li> <li>• bradycardia (low heart rate)</li> <li>• muscle cramps and joint pain</li> <li>• Slow speech, hoarse voice</li> <li>• menstrual problems and infertility</li> <li>• elevated cholesterol levels</li> <li>• low basal body temperature</li> <li>• development of a goitre (a swelling at the front of the neck)</li> </ul>	<ul style="list-style-type: none"> <li>• fatigue</li> <li>• heat intolerance</li> <li>• weight loss, increased appetite</li> <li>• anxiety, nervousness, irritability,</li> <li>• tremor</li> <li>• increased sweating</li> <li>• increased bowel frequency and diarrhoea</li> <li>• tachycardia or atrial fibrillation (increased or irregular heart rate)</li> <li>• muscle weakness</li> <li>• development of a goitre (a swelling at the front of the neck)</li> </ul>

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### Available Tests

#### Thyroid Stimulating Hormone (TSH)

€40

TSH is the hormone produced by the pituitary gland that helps control the thyroid gland. TSH prompts the thyroid gland to make more thyroid hormones and usually increases when T3 and T4 levels drop. When T4 and T3 levels become too high this switches off the production of TSH, by the pituitary, telling the thyroid to slow down production of thyroid hormones.

#### Free T4 and Free T3

€80

This measures the amount of hormone produced by the thyroid. T3 is the more active hormone and conversion from T4 to T3 is important to measure. If T4 and T3 levels are normal despite an abnormal TSH, this may indicate an issue with the pituitary gland or reduced peripheral uptake of thyroid hormones.

#### Reverse T3

€125

Reverse T3 (rT3) is produced as a secondary product and is not metabolically active. There may be an increase in rT3 during conditions of stress. These samples are sent to Europe for testing and therefore are costly and have a longer turn-around time.

#### Thyroid antibodies

€65

Thyroid antibodies (anti-thyroglobulin and anti-thyroid peroxidase) are found in autoimmune thyroiditis, the most common forms of hypo- or hyperthyroidism. The measurement of thyroid antibodies is accurate where, in contrast, the TSH value can fluctuate quite significantly and is less reliable. It is also important to differentiate between autoimmune thyroid conditions and non-autoimmune as the nutritional approach is quite different.

#### Iodine

€95

The most common cause of hypothyroidism alongside autoimmune conditions is a deficiency in iodine. It is important to know your iodine levels before you supplement as where some people are deficient, others have excess iodine and over-supplementing may have adverse effects.

### Test Procedure

- Your nutritionist can organise phlebotomy at a charge of €35 (Dublin and Galway) and a courier to take the samples to the laboratory. Please ask about external phlebotomy if required
- Please stop taking all supplements for three days ahead of your blood test
- Please pay the clinic directly