

Department:	Biochemistry		
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## Levothyroxine Absorption Test

To investigate cause of persistently elevated TSH in primary hypothyroid patients on levothyroxine therapy using oral administration of a high dose of levothyroxine and monitoring TSH and FT4 levels post absorption. Cause may be non-compliance with medication or due to issue with absorption of levothyroxine.

### Indication

To investigate patients with persistently elevated TSH despite apparently adequate levothyroxine replacement therapy.

### Side effects:

- Possible tachycardia and palpitations. Patient should have observations every 60 mins.

### Requirements

- Levothyroxine 1000mcg orally, or total weekly Levothyroxine as a single dose, after discussion with consultant endocrinologist
- iv cannula

### Procedure

#### PATIENT PREPARATION

- Omit usual dose of levothyroxine on day of the test.
- Medication review, document in notes (patient to bring all usual medications).
- 0 hour – cannulate, sample for TSH, FT4
- Give levothyroxine orally as a single dose with water.
- Take bloods for FT4 at 60, 90, 120, 180 minutes.
- Bloods for TSH, FT4 at 240 minutes.

#### TEST

- Insert cannula and perform observations at baseline and every 60 minutes.

Minutes	Procedure	Samples
0	Insert cannula, perform observations	
0 hours	Take sample for <b>TSH, FT4</b>	1 x brown top serum tube
0 hours	Give levothyroxine orally	
60 minutes	Take sample for <b>FT4</b> Observations	1 x brown top serum tube
90 minutes	Take sample for <b>FT4</b> Observations	1 x brown top serum tube
120 minutes	Take sample for <b>FT4</b> Observations	1 x brown top serum tube
180 minutes	Take sample for <b>FT4</b> Observations	1 x brown top serum tube
240 minutes	Take sample for <b>FT4</b> Observations	1 x brown top serum tube

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**Note** Samples will need to be requested individually in EPIC as not included currently as a requestable DFT. Please record each time in minutest from 0 mins (Baseline) to 240 mins.

## Interpretation

Adequate absorption of levothyroxine:

Incremental increase in FT4 at 120mins of  $\geq 54\%$  (+3%)<sup>1</sup> or at 240mins of  $>60\%$ <sup>2</sup> from baseline

## References

<sup>1</sup> A thyroxine absorption test followed by weekly thyroxine administration: a method to assess non-adherence to treatment. Eur J Endocrinol (2013) 168: 913-917

<sup>2</sup>M Utility of the levothyroxine absorption test: the Mayo Clinic experience (2019) 3(Suppl): OR19-3

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