

- Title** Technologies scoping report 22: In the context of hypothyroidism, what is the evidence for the effectiveness of diagnostic tests and thyroid hormone replacement therapies?
- Agency** **HIS; Healthcare Improvement Scotland**  
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[http://www.healthcareimprovementscotland.org/our\\_work/technologies\\_and\\_medicines/shtg.aspx](http://www.healthcareimprovementscotland.org/our_work/technologies_and_medicines/shtg.aspx)
- Reference** Technologies scoping report 22;  
[http://www.healthcareimprovementscotland.org/our\\_work/technologies\\_and\\_medicines/shtg\\_scoping\\_reports/technologies\\_scoping\\_report\\_22.aspx](http://www.healthcareimprovementscotland.org/our_work/technologies_and_medicines/shtg_scoping_reports/technologies_scoping_report_22.aspx)

### Aim

This work was undertaken in response to a public petition addressed to the Scottish Parliament. It is intended to provide an overview of the evidence base, including gaps and uncertainties.

### Conclusions and results

An American non-systematic literature review reported that serum T3 measurement has little specificity or sensitivity for diagnosing primary hypothyroidism, since enhanced T4 to T3 conversion maintains T3 concentrations until hypothyroidism becomes severe.

No systematic reviews were identified assessing the clinical or cost effectiveness of routine adrenal function testing in the context of primary hypothyroidism. UK guidelines state that tests of adrenal function are mandatory in patients with a high index of suspicion of hypopituitarism. No studies were identified on the diagnostic validity or clinical utility of the adrenal stress index test/adrenal stress profile.

A meta-analysis found no statistically significant differences between the clinical effectiveness of combined LT-4+L-T3 therapy and L-T4 monotherapy. In an analysis of patient preference based on five crossover trials, 48% of study participants preferred combined therapy, compared with 27% who preferred L-T4 monotherapy.

Only one small trial comparing effectiveness of DTE with L-T4 was identified. There was no evidence of a difference between study periods on symptoms, general wellbeing and cognitive function.

A meta-analysis of studies of L-T4 treatment in patients with subclinical hypothyroidism reported no benefit to symptom scores or quality of life. Some small improvements in cardiac function tests were identified although the clinical significance of these is unclear. There was significant heterogeneity across studies and the study authors concluded that treatment should be based on clinical judgment and patient preference.

Only one small trial of L-T4 treatment in patients with thyroid function tests within the reference range was identified. Across a battery of tests, clinical benefit of treatment was identified only in a test which assesses memory for non-verbal visual stimuli.

### Recommendations

Technologies scoping reports do not make recommendations for NHSScotland.

### Methods

A systematic search of the secondary literature was carried out between 5–11 September 2013 to identify systematic reviews, health technology assessments and other evidence based reports. A systematic search of the primary literature was conducted between 7–15 October on adrenal stress index/adrenal stress profile, natural desiccated thyroid extract and any treatment with thyroid hormones in a population with thyroid tests within the reference range.

Key websites were searched for guidelines, policy documents, clinical summaries, and economic studies.

### Further research/reviews required

n/a

### Written by

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