NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Guideline scope

Thyroid disease: assessment and management

The Department of Health in England has asked NICE to develop a clinical guideline on thyroid disease.

The guideline will be developed using the methods and processes outlined in Developing NICE guidelines: the manual.

This guideline will also be used to develop the NICE quality standard for thyroid disease.

1 Why the guideline is needed

Key facts and figures

Thyroid disease comprises thyroid enlargement and/or thyroid hormonal dysfunction. Thyroid enlargement may be benign, resulting in nodules or goitre, or malignant in people with thyroid cancer. Conditions causing abnormal thyroid function can be broadly divided into those that result in thyroid gland underactivity (hypothyroidism) or overactivity (thyrotoxicosis).

Thyroid enlargement is common. Clinically detectable goitres or thyroid nodules are present in 15% of the UK population, and the lifetime risk of developing a thyroid nodule is estimated at 5–10%. In many cases, thyroid glands harbouring malignancy are clinically indistinguishable from those that do not. Most people with a non-malignant enlarged thyroid gland and normal thyroid function need no treatment.

Hypothyroidism is a condition of thyroid hormone deficiency and is usually caused by autoimmune Hashimoto's thyroiditis. Primary hypothyroidism refers to conditions arising from the thyroid gland rather than the pituitary gland

(causing secondary hypothyroidism). Hypothyroidism is prevalent in 2% of the UK population and in more than 5% of people aged over 60, with women being 5–10 times more commonly affected than men. Long-term consequences of hypothyroidism include cardiovascular disease and an increase in cardiovascular risk factors, including hypercholesterolaemia.

Thyrotoxicosis is a disorder of excess circulating thyroid hormones caused by increased production and secretion (hyperthyroidism) or by the release of stored thyroid hormones (thyroiditis). In the UK, autoimmune hyperthyroidism (Graves' disease) is the most common form in 60–80% of cases. Thyrotoxicosis is a common endocrine disorder with a prevalence of 2% in UK women and 0.2% in men. Graves' disease is caused by a genetic predisposition to the development of stimulating thyroid auto-antibodies and occurs mostly in women aged 30–60 years. Thyrotoxicosis affects 1–2 per 10,000 children who may be severely affected, with poor educational performance often being an early feature. Long-term consequences of hyperthyroidism include increased cardiovascular morbidity and mortality and bone-related complications including osteoporosis.

Subclinical thyroid dysfunction is a biochemical diagnosis where serum thyroid stimulating hormone levels are higher than the upper limit of the reference interval, and circulating thyroid hormone levels (thyroxine [T4] and tri-iodothyronine [T3]) are within the reference interval. It is often detected incidentally, although some people may have symptoms of hypothyroidism or hyperthyroidism. The prevalence of subclinical thyrotoxicosis is 0.5–10% and that of subclinical hypothyroidism is 4–20%; these wide ranges reflect differences in the studied populations. Data on the long-term consequences of subclinical thyroid dysfunction have been largely derived from populations aged more than 65 years. They include increased cardiovascular morbidity and mortality, increased risk of osteoporosis and potential links to dementia.

Current practice

There is variation in how thyroid disease is investigated and managed in primary and secondary care settings. There are currently no standardised diagnostic or referral criteria in the UK to guide decision-making in primary

care for people with structural thyroid abnormalities or enlargement. In secondary care there is significant variation in the types of diagnostic tests and imaging used, as well as in surgical and non-surgical management and follow-up protocols. Standardisation in thyroid hormone replacement strategies for people with hypothyroidism is currently lacking. In addition, guidance on optimal treatment and follow-up strategies is needed for managing thyrotoxicosis, which is usually done in a shared care setting between primary and secondary care. Opinions regarding the need to treat subclinical thyroid dysfunction, especially in older people, vary widely.

This guideline will also aim to improve the diagnosis, management and follow-up of people with non-malignant thyroid enlargement associated with normal thyroid function.

2 Who the guideline is for

People using services, their families and carers, and the public will be able to use the guideline to find out more about what NICE recommends, and help them make decisions.

This guideline is for:

- Healthcare professionals
- People with non-malignant thyroid enlargement
- People with suspected or confirmed thyroid disease

NICE guidelines cover health and care in England. Decisions on how they apply in other UK countries are made by ministers in the Welsh Government, Scottish Government, and Northern Ireland Executive.

Equality considerations

NICE has carried out an equality impact assessment during scoping. The assessment:

- lists equality issues identified, and how they have been addressed

- explains why any groups are excluded from the scope.

3 What the guideline will cover

3.1 Who is the focus?

Groups that will be covered

- Children, young people and adults with thyroid disease.

No specific subgroups of people have been identified as needing specific consideration.

Groups that will not be covered

- Neonates.
- Pregnant women.

3.2 Settings

Settings that will be covered

The guideline will cover all settings in which NHS-funded healthcare is received.

3.3 Activities, services or aspects of care

Key areas that will be covered

We will look at evidence in the areas below when developing the guideline, but it may not be possible to make recommendations in all the areas.

Note that guideline recommendations for medicines will normally fall within licensed indications; exceptionally, and only if clearly supported by evidence, use outside a licensed indication may be recommended. The guideline will assume that prescribers will use a medicine's summary of product characteristics to inform decisions made with individual patients.

1 Investigation of thyroid dysfunction or thyroid enlargement
   - Indications for thyroid function tests
   - Indications for other tests or imaging

2 Management of non-malignant thyroid enlargement with normal thyroid function
   - Referral for surgery
   - Non-surgical treatment
   - Monitoring non-malignant thyroid enlargement
3 Management of primary hypothyroidism
   - Treatment options: levothyroxine [L-T4]; liothyronine [L-T3]; combination of L-T4 and L-T3; thyroid extract; iodine and selenium supplementation
   - Monitoring hypothyroidism
4 Management of thyrotoxicosis
   - Treatment options: antithyroid drugs; radioiodine; surgery
   - Monitoring thyrotoxicosis
5 Management of subclinical thyroid dysfunction
   - Treating subclinical hypothyroidism
   - Treating subclinical thyrotoxicosis
   - Monitoring subclinical thyroid dysfunction
6 Information for people with thyroid disease, their families and carers

Areas that will not be covered

1 Management of thyroid eye disease
2 Thyroid cancer (except preliminary investigation)
3 Screening for congenital hypothyroidism
4 Acute thyroid dysfunction (thyroid storm and myxoedema coma)
5 Thyroid disease in pregnant women (including pre-conception and postpartum advice)
6 Drug-induced thyroid dysfunction
7 Management of thyroid diseases with dietary and lifestyle interventions

Related NICE guidance

- Ultrasound-guided percutaneous radiofrequency ablation for benign thyroid nodules (2016) NICE interventional procedure guidance 562.
- Coeliac disease: recognition, assessment and management (2015) NICE guideline NG20.

- Diabetes (type 1 and type 2) in children and young people: diagnosis and management (2015) NICE guideline NG18
- Type 1 diabetes in adults: diagnosis and management (2015) NICE guideline NG17.
- Minimally invasive video-assisted thyroidectomy (2014) Interventional procedure guidance 499.
- Suspected cancer: recognition and referral (2015) NICE guideline NG12
- Osteoporosis: assessing the risk of fragility fracture (2012) NICE clinical guideline CG146
- Intraoperative nerve monitoring during thyroid surgery (2008) Interventional procedure guidance 255.

NICE guidance about the experience of people using NHS services

NICE has produced the following guidance on the experience of people using the NHS. This guideline will not include additional recommendations on these topics unless there are specific issues related to thyroid disease:

- Medicines optimisation (2015) NICE guideline NG5
- Patient experience in adult NHS services (2012) NICE guideline CG138
- Medicines adherence (2009) NICE guideline CG76

3.4 Economic aspects

We will take economic aspects into account when making recommendations. We will develop an economic plan that states for each review question (or key area in the scope) whether economic considerations are relevant, and if so whether this is an area that should be prioritised for economic modelling and analysis. We will review the economic evidence and carry out economic analyses, using an NHS and personal social services (PSS) perspective, as appropriate.

3.5 Key issues and draft questions

While writing this scope, we have identified the following key issues, and key questions related to them:

1 Investigating thyroid dysfunction or thyroid enlargement

1.1 Who should be investigated for thyroid disease?

1.2 Which thyroid function tests should be requested?

1.3 When should thyroid antibodies be tested?

1.4 Which imaging tests should be requested?

1.5 Which people with structural thyroid abnormalities should have a fine-needle aspiration biopsy and should this be under ultrasound guidance?

2 Managing non-malignant thyroid enlargement with normal thyroid function

2.1 Which people with non-malignant thyroid enlargement should be referred for surgery?

2.2 What is the clinical and cost effectiveness of non-surgical treatments (e.g. radiofrequency ablation, high intensity focused ultrasound) for non-malignant thyroid enlargement?

2.3 How should non-malignant thyroid enlargement be monitored?

3 Managing primary hypothyroidism

3.1 What is the clinical and cost effectiveness of using levothyroxine [L-T4], liothyronine [L-T3], combination of L-T4 and L-T3, thyroid extracts, and iodine and selenium supplementation to treat primary hypothyroidism?

3.2 How should hypothyroidism be monitored?

4 Managing thyrotoxicosis

4.1 What is the clinical and cost effectiveness of using radioactive iodine vs antithyroid drugs vs surgery to treat thyrotoxicosis secondary to Graves' disease?

4.2 What is the clinical and cost effectiveness of using radioactive iodine vs surgery to treat thyrotoxicosis secondary to toxic nodular goitre?

4.3 When anti-thyroid drugs are used, what is the most clinically and cost-effective way of using these drugs to treat thyrotoxicosis (for example choice of drugs, different treatment regimens)?

4.4 When radioactive iodine is used, what is the most clinically and cost-effective way of using this treatment to treat thyrotoxicosis (for example different dosing strategies)?

4.5 When surgery is indicated, what is the most clinically and cost-effective way of using surgery to treat thyrotoxicosis (for example total vs subtotal thyroidectomy)?

4.6 How should thyrotoxicosis be monitored?

5 Managing subclinical thyroid dysfunction

5.1 What is the clinical and cost effectiveness of treating subclinical hypothyroidism?

5.2 What is the clinical and cost effectiveness of treating subclinical thyrotoxicosis?

5.3 How should subclinical thyroid dysfunction be monitored?

6 Information for people with thyroid disease, their families and carers

6.1 What information should people with thyroid disease, their family and carers receive?

The key questions may be used to develop more detailed review questions, which guide the systematic review of the literature.

3.6 Main outcomes

The main outcomes that will be considered when searching for and assessing the evidence are:

1 Quality of life.
2 Mortality.
3 Resource use.
4 Adverse effects of treatment.

4 NICE quality standards and NICE Pathways

4.1 NICE quality standards

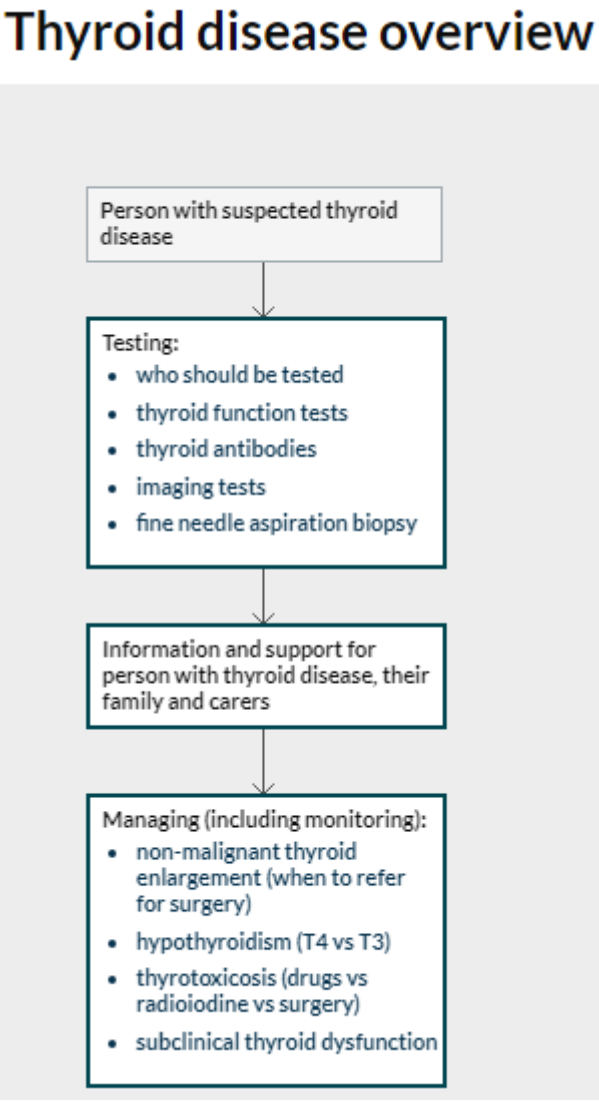
NICE quality standards that may use this guideline as an evidence source when they are being developed

- Thyroid disease. Publication date to be confirmed.

4.2 NICE Pathways

NICE Pathways bring together everything we have said on a topic in an interactive flowchart. When this guideline is published, the recommendations will be included in the NICE Pathway on thyroid disease (in development).

An outline based on this scope is included below. It will be adapted and more detail added as the recommendations are written during guideline development.



5 Further information

This is the final scope, incorporating comments from registered stakeholders during consultation.

The guideline is expected to be published in November 2019.

You can follow progress of the guideline at https://www.nice.org.uk/guidance/indevelopment/gid-ng10074.

Our website has information about how NICE guidelines are developed.