UK National Screening Committee

Adult screening for thyroid dysfunction

28th February 2018

Aim

1. To ask the UK National Screening Committee (UK NSC) to make a recommendation, based on the evidence presented in this document, as to whether or not adult screening for thyroid dysfunction meets the UK NSC criteria to support the introduction of a population screening programme.

Current recommendation

2. In 2013 the UK NSC recommended against screening for thyroid dysfunction in adults. This was based on an evidence review that was produced by Solutions for Public Health. The recommendation covers hyperthyroidism and hypothyroidism; respectively the overproduction and underproduction of thyroid hormones. The key reasons for the recommendation are due to:

- a lack of consensus about the Thyroid- Stimulating Hormone (TSH) cut-off value or values for defining which patients should receive treatment, and uncertainty about what constitutes a normal TSH level.

- two systematic reviews of RCTs on treatment of sub clinical thyroid disease have concluded that there is insufficient evidence of benefit and that the potential adverse effects from treatment have not been adequately studied.

- a lack of clarity about the proportion of people with screen-detected sub clinical hypothyroidism who would revert to normal without treatment.

- the apparent short-term (4 month) benefits of treating screen-detected sub clinical hypothyroidism that were demonstrated in 15 subjects by Abu-Helalah et al (2010) need to be confirmed in a larger study with longer follow-up.

- a lack of RCTs of screening for thyroid disease.

Evidence Summary

3. The current review was undertaken by Solutions for Public Health in accordance with the triennial review process https://legacyscreening.phe.org.uk/biliaryatresia.

4. The main conclusion of the current review is that adult screening for thyroid disease should not be recommended in the UK. This is because:

- The natural history of thyroid dysfunction remains unclear. It is still not possible to determine the proportion of patients with subclinical or overt thyroid dysfunction that will normalise without clinical intervention. **Criterion 1 not met**
- A consensus has not been reached on what constitutes a healthy level of the FT3, FT4 and TSH hormones. Therefore it is not yet possible to define suitable test cut-off thresholds for screening the general population for subclinical or overt thyroid dysfunction. **Criterion 4 not met**
- There is an overall lack of evidence to demonstrate the benefits of treatment for screen-detected subclinical and overt thyroid dysfunction. **Criterion 9 not met**

Consultation

5. A three month consultation was hosted on the UK NSC website. Direct emails were sent to 12 organisations. **Annex A**

6. One response was received from the British Thyroid Association (BTA) who agree with the review's recommendation that screening should not be recommended. Six alterations (outlined in **Annex B**) have been requested and considered by SPH in version 2.2 of the review. The BTA acknowledge the need for a population-based study of screening for thyroid disease. See **Annex C** below.

Recommendation

7. The Committee is asked to approve the following recommendation:

   A systematic population screening programme for adult screening for thyroid dysfunction is not recommended.

   Based on the 20 UK NSC criteria set to recommend a population screening programme, evidence was appraised against the following criteria:

Criteria (only include criteria included in the review)	Met/Not Met
The Condition	
1. The condition should be an important health problem as judged by its frequency and/or severity. The epidemiology, incidence, prevalence and natural history of the condition should be understood, including development from latent to declared disease and/or there should be robust evidence about the association between the risk or disease marker and serious or treatable disease	Not met ✗
The Test	
1. There should be a simple, safe, precise and validated screening test.	Not met ✗
The Intervention	
9. There should be an effective intervention for patients identified through screening, with evidence that intervention at a pre-symptomatic phase leads to better outcomes for the screened individual compared with usual care. Evidence relating to wider benefits of screening, for example those relating to family members, should be taken into account where available. However, where there is no prospect of benefit for the individual screened then the screening programme shouldn't be further considered.	Not met ✗

Annex A

List of organisations\individuals contacted:

1. British Thyroid Association
2. British Thyroid Foundation
3. Faculty of Public Health
4. Royal College of General Practitioners
5. Royal College of Nursing
6. Royal College of Pathologists
7. Royal College of Physicians
8. RC of Physicians & Surgeons of Glasgow
9. Royal College of Physicians of Edinburgh
10. Royal Society of Medicine
11. Society for Endocrinology
12. Thyroid UK

Consultation response to the UK NSC evidence update 'Screening for thyroid disease in adults'	**Response**
British Thyroid Association response to the UKNSC conclusions These conclusions are agreed and supported by the British Thyroid Foundation Professor Graham Williams President of the British Thyroid Association Dr Jackie Gilbert Secretary of the British Thyroid Association	
The British Thyroid Association (BTA) is a learned society of professional clinical specialists and scientists in the United Kingdom who manage patients with thyroid disease and/or are researching into the thyroid and its diseases. We have reviewed the UKNSC recommendations and conclusions. The BTA Executive Committee has invited expert opinion to comment on the document. The BTA agrees the document is comprehensive, logical and well-argued. The conclusions are sound and based on the existing BTA position paper. The BTA agrees that current evidence does not support implementation of a national screening programme for thyroid disease. Furthermore, it was not felt that revision of the BTF 2011 statement is required. Nevertheless, the BTA supports proposals to undertake a population-based study to investigate the value of screening for thyroid disease. Such an evaluation should specifically include study of pregnant women. The need for a RCT to study the intervention or observation of subjects found to have subclinical thyroid disease has long been recognised and will inform clinical practice.	SPH response: Thank you for your comments

Iodine deficiency has important impacts upon health. The BTA supports undertaking a systemic evaluation of iodine status in the UK with larger population sampling to obtain comprehensive data in all age groups. This would inform a randomized controlled trial to determine if iodine prophylaxis reduces functional and nodular thyroid disease. This work is being taken forward by the United Kingdom Iodine Status Strategy Group (UKISS).	
i) Introduction : It is incorrect to state that the pituitary is "in the brain"	SPH response: we have re-worded this sentence to more accurately reflect where the pituitary is located.
ii) Page 10: There is a factual error. The report quotes Lee et al 2011 as reporting an association between overt hypothyroidism and low bone mineral density (BMD). The paper by Lee et al. does not report BMD data and there is no such association reported previously in the literature.	SPH response: We have removed this reference to reflect your comments.
iii) Page 19: It is stated that "Abu-Helalah et al (2010) argue that a symptomatic response to thyroxine is a necessary diagnostic criterion of hypothyroidism". This argument is not generally accepted as a diagnostic criterion of hypothyroidism and the value of table 6 is, therefore, questionable. It is felt that this study has significant flaws and has not contributed to the question of screening	SPH response: Thank you for your comment
Quoted studies point 51: Should be amended to "age 65 and over"	SPH response: This phrase has been amended to reflect your comment.
Quoted studies point 60: Should be amended to "age 65 and over"	SPH response: This phrase has been amended to reflect your comment.
The BTA will shortly be reviewing the specific recommendations for women in pregnancy	SPH response: Thank you for your comment.

UK National Screening Committee

British Thyroid Association response to the UKNSC conclusions

The British Thyroid Association (BTA) is a learned society of professional clinical specialists and scientists in the United Kingdom who manage patients with thyroid disease and/or are researching into the thyroid and its diseases. We have reviewed the UKNSC recommendations and conclusions. The BTA Executive Committee has invited expert opinion to comment on the document.

The BTA agrees the document is comprehensive, logical and well-argued. The conclusions are sound and based on the existing BTA position paper. The BTA agrees that current evidence does not support implementation of a national screening programme for thyroid disease. Furthermore, it was not felt that revision of the BTF 2011 statement is required.

Nevertheless, the BTA supports proposals to undertake a population-based study to investigate the value of screening for thyroid disease. Such an evaluation should specifically include study of pregnant women. The need for a RCT to study the intervention or observation of subjects found to have subclinical thyroid disease has long been recognised and will inform clinical practice.

Iodine deficiency has important impacts upon health. The BTA supports undertaking a systemic evaluation of iodine status in the UK with larger population sampling to obtain comprehensive data in all age groups. This would inform a randomized controlled trial to determine if iodine prophylaxis reduces functional and nodular thyroid disease. This work is being taken forward by the United Kingdom Iodine Status Strategy Group (UKISS).

Specific points relating to the UKNSC document

i) Introduction : It is incorrect to state that the pituitary is "in the brain"

ii) Page 10: There is a factual error. The report quotes Lee et al 2011 as reporting an association between overt hypothyroidism and low bone mineral density (BMD). The paper by Lee et al. does not report BMD data and there is no such association reported previously in the literature.

iii) Page 19: It is stated that "Abu-Helalah et al (2010) argue that a symptomatic response to thyroxine is a necessary diagnostic criterion of hypothyroidism". This argument is not generally accepted as a diagnostic criterion of hypothyroidism and the value of table 6 is, therefore, questionable. It is felt that this study has significant flaws and has not contributed to the question of screening.

iv) Quoted studies point 51: Should be amended to "age 65 and over"

v) Quoted studies point 60: Should be amended to "age 65 and over"

vi) The BTA will shortly be reviewing the specific recommendations for women in pregnancy.

These conclusions are agreed and supported by the British Thyroid Foundation

Professor Graham Williams

President of the British Thyroid Association

Dr Jackie Gilbert

Secretary of the British Thyroid Association

Additional References:

1. Razvi S, Ingoe L, Keeka G, Oates C, McMillan C, Weaver JU. 2007 The beneficial effect of L-thyroxine on cardiovascular risk factors, endothelial function, and quality of life in subclinical hypothyroidism: randomized, crossover trial. J Clin Endocrinol Metab.92:1715-23

2. Tunbridge WMG & Vanderpump MPJ 2000. Population screening for autoimmune thyroid disease. Endocrinology and Metabolism Clinics of North America 29:239-53