

UK NATIONAL SCREENING COMMITTEE

Screening for Thyroid Disease

21 November 2013

Aim

1. To agree the UK National Screening Committee's (UK NSC) formal policy position on thyroid disease.

Background

2. A review of screening for thyroid disease against the UK NSC criteria was carried out in February 2013 by Dr Gail Pittam, Senior Researcher, Dr Martin Allaby, Consultant in Public Health Medicine and Dr Suzi Coles, Specialty Registrar in Public Health of Solutions for Public Health (SPH).
3. The review covers hyperthyroidism (over production of thyroid hormones) and hypothyroidism (under production of the thyroid hormones)
4. In 2004 the US Preventative Services Task Force (USPSTF) concluded the evidence is insufficient for or against routine screening for thyroid disease in adults. The US Agency for Healthcare Research and Quality (AHRQ) recently evaluated the effectiveness of screening and treatment of subclinical hypothyroidism and hyperthyroidism. Their 2011 report concluded that there were no studies that evaluated the benefits and harms of screening for subclinical thyroid dysfunction in the primary care setting, and that there was lack of information on the potential harms of treatment.
5. UK Guidelines published jointly by the Association for Clinical Biochemistry (ACB), the British Thyroid Association (BTA) and British Thyroid Foundation (BTF) in 2006 state that screening for thyroid dysfunction in a healthy adult population is not warranted.
6. In 2010 a randomised double-blind cross-over trial investigating the efficacy of treatment for screen-detected adult hypothyroidism was published (Abu-Helalah et al 2010). The authors concluded that 'the results indicate that screening for hypothyroidism would be worthwhile. Approximately 1% of people screened would have a better quality of life. Pilot screening programmes for adult hypothyroidism are justified.'
7. There are differences in opinion between the British Thyroid Association and British Thyroid Foundation and researchers at the Wolfson Institute (Abu-Helalah et al 2010) about the need for population screening which has set the context within which this review has been prepared. The Wolfson Institute believe it would be of benefit whereas the two national thyroid organisations believe that the benefits of screening are controversial.
8. In January 2011 the BBC (<http://www.bbc.co.uk/news/health-12252813>) reported the following regarding the Abu-Helalah et al (2010) trial:

Around 100,000 older people in the UK are missing out on thyroid medicine that could improve their lives, according to a study. The Journal of Medical Screening study examined women over 50 and men over 65 - and found 8% had underactive thyroids. But many were not getting treatment for

symptoms, including lethargy and weight gain. Researchers, at the Wolfson Institute, said screening would improve lives.

9. In March 2011 the British Thyroid Association and British Thyroid Foundation (BTA/BTF 2011) released the following joint statement about screening for thyroid disorders in the elderly in response:

There has been discussion in the media about the value of population screening for thyroid disorders in the elderly. The question of whether healthy adults living in the UK would benefit from screening for thyroid disease is controversial. To be effective, the benefit from a screening programme must outweigh the harm, both physical and psychological, caused by the test, diagnostic procedures and treatment. This was addressed in the UK national guidelines on testing thyroid function published in 2006.

In subclinical hypothyroidism, there is still debate as to what constitutes a normal Thyroid Stimulating Hormone (TSH) level, particularly in older people, since the reference range probably rises with healthy ageing. Although some people will progress to have overt hypothyroidism, recent study results suggest that a significant proportion of people with mild thyroid dysfunction revert to normal without treatment. Recent meta-analyses [Rodondi et al 2010] have suggested that there is an increased risk of heart problems in younger adults and in those with a TSH level above 10 mIU/L in their blood, but not in those with evidence of milder thyroid failure and a TSH level below 5 mIU/L.

If a patient has been identified through a screening programme and does not have symptoms, then it is reasonable to be cautious before recommending levothyroxine therapy, especially in those with only a slightly raised TSH level. People identified by positive screening tests do not always take their tablets regularly, particularly if their symptoms do not change or if they suffer from side effects. Treatment does appear to be justified in those who are symptomatic, pregnant or wishing to have children, aged 65 years or older, or who have evidence of heart failure [Vanderpump 2010]. However, for the vast majority of patients, adopting a 'wait and see' policy rather than intervention may avoid unnecessary treatment or the potential for harm.

Consultation

10. A public consultation on the screening review took place between 22nd March and 22nd June 2013. Two responses to the consultation were received from the British Thyroid Association and British Thyroid Foundation.

Conclusion

11. The screening review shows that it is not appropriate to screen for thyroid disease because:
 - There is a lack of consensus about the TSH cut-off value or values for defining which patients should receive treatment, and what constitutes a normal TSH level is still a matter of debate (British Thyroid Association and the British Thyroid Foundation 2011).
 - Two systematic reviews on RCTs on treatment of subclinical thyroid disease have concluded that there is insufficient evidence of benefit and that the potential adverse effects from treatment have not been adequately studied.
 - It is unclear what proportion of people with screen-detected subclinical hypothyroidism would revert to normal without treatment, but it could be a substantial minority.
 - The apparent short-term (four month) benefits of treating screen-detected subclinical 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.

- There have been no RCTs of screening for thyroid disease.

Recommendation

12. The UK NSC is asked to agree the policy position on screening for thyroid disease

A national screening programme to screen for thyroid disease is not recommended.

Annex A



UK National Screening Committee Thyroid disease - an evidence review

Consultation comments

There were two responses to the UK National Screening Committee's consultation on thyroid screening in adults.

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

Response from the British Thyroid Foundation to the UKNSC conclusions

The British Thyroid Foundation is a charity dedicated to supporting people with thyroid disorders and helping their families and people around them to understand the condition. Since setting up in 1991 we have worked with medical professionals to ensure that the information we provide is reliable and evidence-based.

We have reviewed the UKNSC recommendations and conclusions and invited our lay volunteers, medical advisers and trustees to comment on the document.

Our respondents agree that on the basis of the current evidence a national screening programme is inappropriate. Only a small proportion of elderly people with 'elevated TSH' will go on to develop symptomatic thyroid disease. We can see problems in treating biochemical results rather than people, and the variability of TSH assays would be a confounder.

Several respondents pointed out some intrinsic weaknesses of the Abu-Helalah study in terms of the sample size and the length of the study.

We support the recommendation for further research into the iodine status in the UK.

We agree that the overall conclusions of the UKNSC are sound and that there is no need at the present time to modify the joint statement from the British Thyroid Association and the British Thyroid Foundation on *Screening for thyroid disorders in the elderly* (16 March 2011) which appears on the BTF website

http://www.btfthyroid.org/images/stories/pdf/btf_screening_for_thyroid_disorders_in_the_elderly.pdf.

Additional references

Razvi S, Ingoe L, Keeka G, Oates C, McMillan C, Weaver JU. The beneficial effect of L-thyroxine on cardiovascular risk factors, endothelial function, and quality of life in subclinical hypothyroidism: randomized, crossover trial. *Journal of Clinical Endocrinology and Metabolism*. 2007 May;92(5):1715-23

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

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Janis Hickey
Director - British Thyroid Foundation

Judith Taylor
Chair of Trustees – British Thyroid Foundation