

# The reality of subclinical hypothyroidism in general practice

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## ABSTRACT

**INTRODUCTION:** Subclinical hypothyroidism (SCH) is common, reported to affect 4–10% of the adult population. Recommendations for treatment of SCH are contentious, with protagonists even disagreeing over the rationale for medical intervention. How general practitioners (GPs) manage patients with elevated thyroid stimulating hormone (TSH) and normal thyroid hormone results are unknown. This study aimed to explore how GPs think about diagnosing and managing SCH.

**METHODS:** A qualitative study using focus groups conducted between December 2007 and March 2008 to understand how GPs perceive SCH and their diagnostic and management process.

**FINDINGS:** Thirteen GPs in three focus groups in Waikato, New Zealand participated. There is wide variability in how GPs perceive SCH and their knowledge of the disease. A patient-centred approach to diagnosis and management was commonly reported. Consideration of overt pathology and medicolegal issues also influenced perceptions of SCH, but lack of evidence regarding outcomes of treatment made such issues complex.

**CONCLUSION:** SCH remains a complex entity because of ambiguity regarding symptoms, uncertainty regarding prognosis and variation in advice regarding treatment. This complexity is reflected in the disparate responses by GPs to the diagnosis and management of SCH.

**KEYWORDS:** Hypothyroidism; family practice; qualitative research

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## Introduction

Subclinical hypothyroidism (SCH) is common, reported to affect up to 10% of the adult population.<sup>1–4</sup> Prevalence increases with age, with SCH affecting up to 20% of women over 60 years of age.<sup>1,5,6</sup> Some evidence suggests SCH may adversely influence cardiovascular risk factors, cognitive function and quality of life.<sup>1,7–20</sup>

SCH is diagnosed by demonstrating elevated levels of serum thyroid stimulating hormone (TSH) with levels of free thyroxine (FT<sub>4</sub>) within the normal reference interval.<sup>21</sup> Free triiodothyronine (FT<sub>3</sub>) levels, if measured, are also within the reference interval.<sup>22</sup> A diagnosis of SCH should, by definition, be based on laboratory findings of an elevated TSH independent of patient symptoms. The

literature, however, is unclear over the inclusion or exclusion of symptoms in the definition.<sup>21–24</sup> If symptoms are considered part of the presentation of SCH they are invariably vague and are a poor indicator of abnormal thyroid function tests.<sup>25</sup>

Recommendations for treatment of SCH are contentious, with protagonists even disagreeing over the rationale for medical intervention.<sup>26,27</sup> Justifications for treatment with thyroxine include reducing the risks of cardiovascular disease (e.g. by altering lipid levels), preventing progression to overt hypothyroidism, or reducing adverse effects on quality of life and cognitive function.<sup>15,28–32</sup> However other investigators have not been able to replicate these findings.<sup>17,33–37</sup> The conflicting evidence regarding the benefit of treating SCH

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greatly increases the uncertainty amongst GPs as to how to manage this condition.

TSH is commonly tested by GPs with over 500 000 assays being requested in New Zealand (NZ) each year.\* GPs often face the scenario of a patient with a mildly raised TSH whose presenting symptoms have either resolved or can be attributed to another cause.<sup>38</sup> Consideration must also be given to the process of developing reference intervals which are based on two standard deviations. There is the possibility of an elevated TSH result being within the 5% of 'normal' which are outside the reference interval. How GPs manage patients with an elevated TSH but normal FT<sub>4</sub> and FT<sub>3</sub> is unknown.

The aims of this study were to examine the views of GPs on their definition of SCH, explore their decisions for requesting TSH assays, their rationale for re-testing, their management of patients with SCH and decision-making for treating with thyroxine in relation to SCH.

## Methods

Following ethics approval, we invited participants (through their practice managers) from general practices with more than four resident GPs to participate in focus groups. These practices were purposively selected for the variable size of their practice populations and for the diversity of their geographical location. Three of the practices approached agreed to participate in the study: one urban, one semi-rural and one rural. Each focus group contained at least four GPs who worked at the practices. Focus groups took place between December 2007 and March 2008. A focus group facilitator used a semi-structured approach with guided discussion around set themes—defining subclinical hypothyroidism, leading to and confirming the diagnosis, managing the diagnosis and support. Each focus group lasted about 40 minutes. Meetings were held at the recruited general practice. Interviews were recorded and transcribed. Transcripts were reviewed by two researchers and a coding list developed. Transcripts were coded line by line by one researcher using NVivo soft-

ware (QSR, 1999 version 1). A general inductive approach was taken using open coding.<sup>39</sup> Each new code prompted a re-read of previous transcripts to ensure there was consistency between coding methods. Coding underwent a series of iterations leading to key themes being identified and a model of SCH in general practice developed.

Ethical approval for this study was granted by the Northern X Regional Ethics Committee (NTX/07/07/068).

## Findings

Ten male and three female GPs participated and were employed by the practices in which the focus group took place. Six GPs had completed their medical training in NZ and seven GPs completed their medical training overseas—mostly in the UK. The NZ-trained doctors on average had completed their training earlier (1980 versus 1984). By location, the average year of registration for participants were urban 1980, semi-rural 1983 and rural 1982.

The results will be discussed in sections on how SCH is defined, why test for SCH, what is tested, managing and medicating for SCH.

## Defining SCH

There was both variation and lack of clarity regarding the term 'subclinical hypothyroidism'. Some referred to 'subclinical' in the literal sense of having no clinical findings '*...that there are no symptoms...*' (GP9), or indicated uncertainty regarding the term '*...I'm confused... we're giving you all the clinical things that you would find in hypothyroidism so therefore it is not subclinical*' (GP10). Some defined subclinical hypothyroidism as '*...having a mildly elevated TSH without any symptoms*' (GP1,4,8) while another stated that they just '*...[didn't] know what the criteria are*' (GP7). Subclinical hypothyroidism was also described in terms of '*...an incidental laboratory finding*' (GP10), and without need of clinical intervention. Others queried '*...is it actually a disease?*' (GP7) or stated that they had '*...never even thought of that term before*' (GP3).

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There was uncertainty about the risks posed by having subclinical hypothyroidism—whether that be ‘...*excess morbidity or mortality*’ (GP11), ‘...*quality of life*’ (GP10) or ‘...*anaesthetic risks*’ (GP9). There was reference to the existing evidence base regarding SCH: ‘...*we don’t believe at the moment there is any harm in [not treating]*’ (GP3), a suggestion that ‘...*there’s been no good research suggesting that there’s any morbidity associated with this phenomenon*’ (GP7). Lack of evidence would seem to influence how GPs perceive and manage SCH ‘...*If it is proven...then we might change our ways*’ (GP3).

### Why test?

The rationale for testing can be separated between predominantly disease-focussed testing, patient-focussed imperatives and doctor-centred activities.

Predominantly disease-focussed testing for thyroid disease was undertaken when the GP felt there was an increased risk of thyroid disease. GPs referred to the symptom of tiredness as a common complaint ‘...*tiredness is such a general symptom that it usually doesn’t have clinical causes*’ (GP10), ‘...*you know just “tired all the time”, one in four consultations “tired all the time”*’ (GP3) and ‘...*commonest time to tick [TSH] is when someone says they are tired*’ (GP2). Other symptoms included weight gain and fatigue, a common picture being of ‘...*a lot of these women that are overweight and lethargic and around menopause*’ (GP10). Apart from symptoms of thyroid dysfunction, there are also a range of clinical situations where testing was thought important: a family history of thyroid dysfunction, prescribed medication such as lithium or amiodarone, having goitre, other endocrine or other autoimmune conditions.

Patient-focussed imperatives encompassed situations where the GP felt there was a low likelihood of the test being positive but tested anyway as part of patient management. In some cases GPs did not believe that the patient had any thyroid abnormality prior to testing but undertook a patient-centred approach ‘...*to show that there is not something nasty going on... just to prove that to people... you’re not particularly looking for thyroid disease but you’re actually reassuring people there is nothing sinister or seriously wrong... part of the*

### WHAT GAP THIS FILLS

**What is already known:** GPs’ impressions of subclinical hypothyroidism (SCH) and rationale for thyroid function testing are not well studied. The conflicting evidence regarding the benefit of treating SCH greatly increases the uncertainty amongst GPs as to how to manage this condition.

**What this study adds:** It could be said that GPs take a pragmatic response to both diagnosis and management of SCH. Guidelines that would provide principles and decision support for the management of SCH would be of considerable advantage to GPs.

*process is talking through the things that it could be, the exclusion of things even*’ (GP3), and ‘...*patients are looking for why they are not feeling well... it shows that you’re taking them seriously and listening*’ (GP2).

A blood test was sometimes seen as an important as part of the management of a clinical situation: ‘...*I find myself, when someone comes in and says “Doc, I must have something wrong with me” and you think “yeah, yeah, yeah, you just need a break, you’re just a bit stressed or whatever”, but you find yourself ticking boxes just for something to do for them. It’s the management. It’s not that you’re looking for disease, it’s the management*’ (GP13).

Symptoms were not always behind the decision to request a thyroid function test: ‘...*some colleagues may do the general tick the box*’ (GP11) or ‘...*if the patient stated they wanted a check up, so you tick TSH*’ (GP4). In this sense, the GP was effectively screening for thyroid disease at the patient’s request. Most GPs were clear that TSH was not being used as a screening test. However, screening was associated with a cost ‘...*I could think of a lot of other things that we could put money into screening before that*’ (GP11) but it was believed that this was not screening ‘...*we’re not thinking subclinical hypothyroidism; we’re just thinking “Is their thyroid working?”*’ (GP3).

Doctor-centred reasons for testing included medicolegal issues as well as safeguarding the doctor–patient relationship. Risk of complaint would seem to be one driver for testing: ‘...*You think that if you don’t do [thyroid function testing] and they go somewhere else where they may have a TSH and it is abnormal, you then get into*

*trouble. So you just tick it to make sure that everything is alright'* (GP12). The implications of not testing on reputation was that *'...you look a bit of a dunce if you've been telling someone they've been stressed all the time and they end up with a hypothyroidism'* (GP3).

Changing expectations regarding expediency of diagnosis also influenced the decision to test: *'...you know, medicine these days, we rely on a lot to make diagnoses reasonably early... we rely on laboratories'* (GP9). For GPs a TSH was reassurance for themselves where *'...most of the time you are reinforcing the words you have spoken with hard evidence to back up what you think the problem is... it's not positively looking for something, it's almost negatively looking... as a reassurance factor that (a) they do need to take a break and (b) this is life catching up with them not some dreaded disease'* (GP11). The perception of thoroughness and professional responsibility was considered important: *'...if you'd done a TSH then and it was normal, and then it was abnormal two years later, then you'd say well that wasn't my fault. You were just tired then but now you're hypothyroid'* (GP3).

### What to test?

TSH was most commonly used as a first-line test and there was particular reference to recommendations concerning this *'...We used to always do TSH and T4 and T3 and now we don't'* (GP3). However, where this was not always done *'...I checked T4 and T3, which you aren't allowed to do nowadays but I did'* (GP3); it mostly related to the perceived risk of thyroid disease being the cause of symptoms *'...If I think it's a very long shot [of having thyroid dysfunction] I will just order TSH'* (GP10) or *'...If I think there may be a basis for a thyroid problem going on then I order all three'* (GP1) or habit *'...I do TSH and T4 but the authorities recommend you do TSH first'* (GP12).

Many quoted advice from the local consultant endocrinologist as a guide to decision-making for which test to perform, *'...[He] said at a meeting, if they come in with a symptom then they are not asymptomatic—then you shouldn't just do a TSH'* (several GPs). Another reason for requesting more than TSH alone was *'...to exclude if there are any pituitary/hypothalamic axis problems'* (GP12).

### Managing SCH

There was considerable variability in how GPs managed SCH and this was based on how they defined SCH. Some GPs adhered to rule-based management *'...My teaching for TSH has been about 10, then you probably should do something about it'* (GP10), with variable thresholds *'...8? I'd start thinking about it around there'* (GP13), *'...I'd go for 9. I think there was some paper that came out and said that this type of subclinical thyroid wasn't that dangerous'* (GP7) *'...I'd say above 7 I would want to see them back'* (GP4).

The interval to further tests was also variable, ranging from one month to one year, some acknowledging the advice of the consultant endocrinologist *'...[he] says it takes about three months for the TSH to change'* (GP9) and *'...I remember him saying there is no point doing it under three months'* (GP10). This situation was further complicated by laboratories having different reference ranges. *'...What about the lab changing, getting a new reference range and decide now that you don't have the disease?'* (GP3). Patients may be told *'...they've got a "lazy thyroid" and we'd just keep an eye on it and see how things go'* (GP12) or *'...their TSH is slightly up. It may or may not be part of the spectrum of what's causing their tiredness but it's certainly not THE cause'* (GP9) or *'...their thyroid is a "bit lazy" or "under-active" or it's a bit "sluggish" and people are quite happy to accept that... generally speaking'* (GP11).

### Medicating for SCH

In some instances a raised TSH would lead to consideration about thyroxine medication. For both patient and doctor, there may be a choice: *'...Well, if someone's trucking along quite happily and incidentally you find this slight lab abnormality and say to them look your TSH is up a bit, this could indicate that you're somewhere along the line of [your thyroid] being under-active, just tell them that if this progresses then... do you want to consider treatment?'* (GP9).

The choice of treatment may depend on how the patient is feeling *'...a lot of patients are quite delighted that you find something is abnormal, you know, starting them on treatment... found something wrong... "I'm not going nuts", you know*

*what I mean?’ (GP3) or ‘...if they’re symptomatic I treat them, even if their [TSH levels are] 6, 7, 8...’ (GP8). Many GPs considered low doses of thyroxine as a trial ‘...they’re getting more and more tired, and you keep putting them off and [their TSH level] gets to 7, 8... you would certainly tend to start them as a trial... on a small dose of thyroxine and give it a go’ (GP9). The informal rules tended to be ‘...50mcg thyroxine once a day’ (GP5) and ‘...start low, go slow’ (GP11). The aim of treatment, if instituted, was to improve symptoms ‘...After three months of treatment... the TSH is then normal and they still have their symptoms, then you have to think of other things’ (GP8). Once treatment was started one of the aims was to bring TSH into the normal range ‘...if their TSH is still the same as subclinical TSH... why worry about it now? I guess I’m a bit obsessive and it has to fit in a range’ (GP10).*

## Discussion

For GPs, SCH represents a poorly defined condition that exists in a wide variety of contextual circumstances and where the value of intervention is questionable. From our study it is clear that GPs experience uncertainty both in interpreting tests suggestive of SCH, and in the management of SCH. This uncertainty amongst GPs reflects the conflicting literature regarding the diagnosis, prognosis and treatment of SCH.<sup>40</sup>

The variation in the ways GPs define SCH indicate that at one extreme SCH does not represent a disease but simply an abnormal laboratory result with no relationship to symptoms or prognosis. The other view is that SCH is a disorder with justification for treatment or monitoring. Complicating this picture is the patient-centred focus that is characteristic of general practice and was widely prevalent in the participant GPs that laboratory tests and presenting symptoms need to be contextualised on an individual basis.

A diagnosis of a disease may be a relief to some patients and a challenge to others even if the symptoms and tests are identical. GPs were aware of the tensions between the imperatives of population-based principles and the needs of individual patients.

Three quite different yet complementary reasons for ordering thyroid function tests have been identified, namely, the search for disease, the desire to meet patient expectations and the needs of the GP for security against breakdown in the doctor–patient relationship. It would appear that the predominant reason for ordering a TSH assay is for the investigation of vague symptoms. Ill-defined symptoms are common in general practice. The management of a patient with such symptoms can be complex as the cause can range from the life-threatening to the self-limiting. The discovery of SCH when testing for more serious thyroid disease can be seen as an inadvertent and awkward result where the meaning attached to the label is dependent on patient-focussed contextual circumstances.

TSH testing was regarded by some GPs as a defence in a potential medicolegal dispute. A TSH assay was viewed as documentation supporting discussion which has taken place within a consultation. Testing also serves to reinforce to a patient that they are being listened to, their symptoms are taken seriously and that the doctor is being thorough. Historically, these qualities were recognised as desirable for GPs if they wished to survive in private practice.<sup>41</sup>

Patient expectations also contribute to the demand for GPs to identify ‘disease’ early. The status of GPs has been changing, which in part can be attributed to the empowerment of patients as consumers of health.<sup>42</sup> Having deficient clinical knowledge in the eyes of the patient may threaten the position of privilege in which doctors have historically been placed.<sup>43</sup>

While the use of TSH is not considered screening by the GPs, a described population (particularly those who are female, overweight and post-menopausal) would seem to be targeted opportunistically. There is evidence to support that older populations and women have more thyroid disease than the younger population and men.<sup>1,44</sup>

Expert advice by the local consultant endocrinologist was influential for some GPs when interpreting laboratory tests and in the timing of follow-up tests. Underlying this are patients presenting with symptoms, most commonly



tiredness, who feel that something is wrong. When diagnosing possible thyroid dysfunction, symptoms are taken into account. Often these are the sole rationale for requesting thyroid function tests. In many instances, GPs appear to intuitively manage their patients—where TSH levels form part of a total picture, rather than as the whole clinical picture. TSH levels of 6, 7 or 8 mIU/L described as a threshold for treatment shows that arbitrary cut-offs are decided by GPs in providing patient-centred care. The approach depends on whether GPs manage results in terms of 'mild thyroid failure' with the likelihood of thyroid function remaining constant (to treat based on symptoms) or as part of a disease process that could progress (to treat based on laboratory results). There was no consensus for when a patient should return for follow-up blood tests.

The decision to treat subclinical hypothyroidism would seem to incorporate a patient-centred approach that is based on symptoms (or lack of symptoms), negotiation and request. Once treatment was commenced GPs commonly tended to continue this approach, where the aim of treatment was to improve a set of vague and non-specific symptoms. Alternatively, some GPs chose to treat a raised TSH level by returning it to within the normal reference range irrespective of quality of life.

One aspect in decisions to test and treat is costs to the health system and to the patient. Costs and benefits of a screening approach to SCH were discussed, but other costs and benefits to the health system had very limited acknowledgement by the participants. GPs appear to take a strongly patient-centred and not population-centred approach to their clinical role. The cost-effectiveness of treatment, although outside the realms of this paper, needs to be considered with emphasis on the intended outcomes for management and treatment. While the risk of progression of disease was mentioned, the potential for cardiovascular risks, effects on cognitive function or on mental health were not stated even with current literature identifying these as possible effects.<sup>12,45–48</sup>

The demography of practices and of GP profiles reflects the range of NZ doctors, in particular

over 34% who have come from overseas and over 50% who work within general practice.<sup>49</sup> It is doubtful that doctors from overseas have had more experience or training in managing SCH considering a lack of international guidelines on this topic and the improvement in TSH assay testing in the past two decades.

Subclinical hypothyroidism remains a complex entity because of ambiguity regarding symptoms, uncertainty regarding prognosis and variation in advice regarding treatment. This complexity is reflected in the quite disparate responses by GPs to the diagnosis and management of SCH. Further complicating the picture is the patient-centred nature of general practice where imperatives of population-focussed medicine and disease-focussed secondary care represent only part of an intricate decision-making process. In such circumstances, it is understandable that GPs take an eclectic approach to both diagnosis and management of SCH. Indeed, it could be said that this is a pragmatic response to an otherwise unsolvable dilemma. Guidelines that would provide principles and decision support for the management of SCH would be of considerable advantage to GPs.

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## COMPETING INTERESTS

None declared.