

Connecticut Children's CLASP Guideline

Elevated TSH with Normal Thyroid Hormone Level

INTRODUCTION	<p>Pediatricians screen for thyroid dysfunction in children and adolescents with poor linear growth, a history of severe brain injury or developmental abnormalities, hypothyroid symptoms [Fatigue and/or exercise intolerance, unusual weight gain, constipation, sparse, coarse and dry hair, coarse, dry and thickened skin, slow pulse, cold intolerance, facial swelling, a family history of thyroid disease, goiter, or prior cranial irradiation for cancer treatment.</p> <p>Subclinical Hypothyroidism (SH) is defined as an elevated Thyroid Stimulating Hormone (TSH) level with normal thyroid hormone levels. In children, SH has an estimated prevalence of 2-3%, though pediatric epidemiological data are limited. Its course is often benign, with spontaneous remission occurring in 80-90% of cases. Elevated TSH levels are observed in up to 23% of obese children, possibly as an adaptive response to increase energy expenditure. However, thyroid hormone replacement therapy does not aid in BMI reduction.</p>
INITIAL EVALUATION AND MANAGEMENT	<p>INITIAL EVALUATION:</p> <ul style="list-style-type: none"> Targeted history and physical exam <ul style="list-style-type: none"> Growth data Palpation of the thyroid gland Family history of thyroid disease Preferred thyroid screening tests are TSH and free T4 (TSH with reflex free T4 is the recommended screening test and is more cost effective than ordering both tests at once) Obtain Thyroid Peroxidase and Thyroglobulin antibodies (TPOAb and TGAb) <i>Biotin containing supplements should be discontinued > 5 days prior to obtaining screening labs</i> <p>INITIAL MANAGEMENT: See Appendix: Elevated TSH with Normal Thyroid Hormone Level Algorithm</p>
WHEN TO REFER	<p>See PCP management in Appendix.</p> <p>URGENT REFERRAL (within 1 week) IF:</p> <ul style="list-style-type: none"> Abnormal Free T4 <p>ROUTINE REFERRAL (within 4 weeks) IF ANY COMPLICATING FACTORS:</p> <ul style="list-style-type: none"> Younger than 2 years of age Positive thyroid antibodies* Enlarged thyroid gland Asymmetric thyroid enlargement, palpable mass/nodule Thyroid injury, history of radiation or any neck surgery Significant chronic medical conditions, such as: <ul style="list-style-type: none"> ✓ Cardiac defects ✓ Down Syndrome ✓ Turner Syndrome ✓ Dyslipidemia ✓ Other autoimmune conditions ✓ Any other syndrome Past or present medication use that may alter thyroid dysfunction, such as: <ul style="list-style-type: none"> ✓ Lithium ✓ Amiodarone ✓ Interferon α ✓ Cholestyramine ✓ Phenytoin ✓ Carbamazepine ✓ Interleukin-2 <p><i>*If positive antibodies but normal or low free T4 (Hashimoto's Thyroiditis in euthyroid state), refer to Endocrinology. Alternatively, if desired, may contact Endocrinologist to discuss monitoring patient by the primary care provider.</i></p>

	<p>DELAY REFERRAL IF:</p> <ul style="list-style-type: none"> ▪ Mildly elevated TSH (> reference range but ≤ 7.5 mIU/L) and normal thyroid hormone level (Free T4) and no complicating factors (see below) ▪ If level obtained during illness, repeat one-month post-illness prior to making referral
HOW TO REFER	<p>Referral to Endocrinology via CT Children's One Call Access Center Phone: 833.733.7669 Fax: 833.226.2329 Make a Referral - Connecticut Children's (connecticutchildrens.org) For more information on how to place referrals to Connecticut Children's, click here.</p> <p>Information to be included with the referral:</p> <ul style="list-style-type: none"> ▪ Notes from the initial and follow up visits with the PCP ▪ Complete growth chart ▪ Thyroid lab results and any other relevant diagnostic studies
WHAT TO EXPECT	<p>What to expect from CT Children's Visit:</p> <ul style="list-style-type: none"> ▪ History, physical exam reviewed ▪ Evaluation of prior laboratory testing and growth chart ▪ Additional labs, if appropriate ▪ Imaging studies, if appropriate ▪ Initiation of treatment with thyroid hormone, if appropriate ▪ Comprehensive patient education <p>Referral Timeline:</p> <ul style="list-style-type: none"> ▪ If Free T4 abnormal: refer to endocrinology for appointment within 1 week ▪ All other referrals: routine referral to endocrinology for appointment within 1 month

APPENDIX: Elevated TSH with Normal Thyroid Hormone Level Algorithm

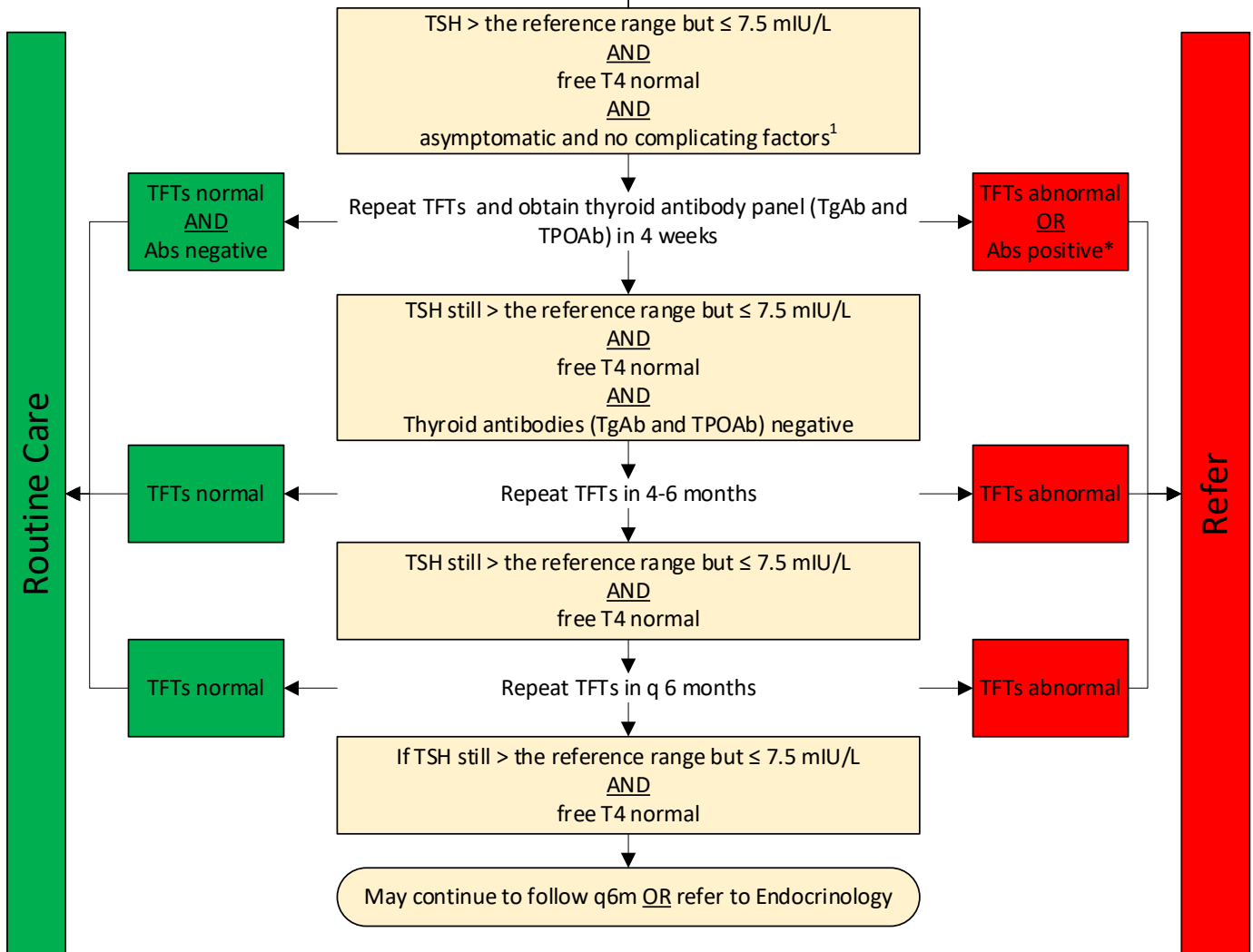
Abbreviations:

- **Free T4** = thyroid hormone level
- **TFTs** = thyroid function tests (free T4 & TSH)
- **TgAb** = Thyroglobulin antibody
- **TPOAb** = Thyroid Peroxidase antibody

¹Complicating Factors

- Younger than 2 years of age
- Enlarged thyroid gland
- Asymmetric thyroid enlargement, palpable mass/nodule
- Thyroid injury, history of radiation or any neck surgery
- Significant chronic medical conditions such as: cardiac defects, Down Syndrome, Turner Syndrome, dyslipidemia, other autoimmune conditions, any other syndrome
- Past or present medication use that may alter thyroid dysfunction such as: lithium, amiodarone, interferon- α , cholestyramine, phenytoin, carbamazepine, interleukin-2

*Biotin containing supplements should be discontinued > 5 days prior to obtaining screening labs



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