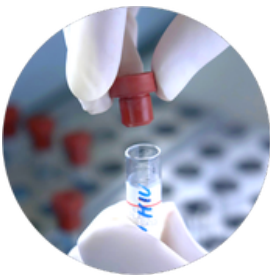


TESTING & DIAGNOSIS

Your First Appointment

Reports from practitioners and the latest research describe the following best practices for a comprehensive evaluation regarding a possible thyroid disorder. A thorough intake and exam for thyroid disease should begin with the following:

- ✓ Detailed symptom list
 - ✓ Careful account of any family history of thyroid disease
 - ✓ Physical exam for an enlarged thyroid or nodules
 - ✓ Full thyroid panel and other essential lab testing (see below)
 - ✓ Ultrasound ordered (if suspicious swelling, pain, or nodules are detected)
-



Order Full Thyroid Labs

Through our trusted partner laboratory, you can now order your own comprehensive thyroid panel, including Reverse T3, at a special discounted rate. Coming soon to our website!



Schedule A Phone Consult

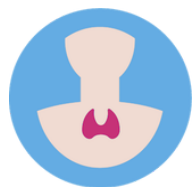
Phone consults with a medical professional who is in line with our mission can help you understand your labs and create a personalized plan for you. Coming soon to our website!

Why is the TSH test not enough?

The Thyroid Stimulating Hormone (TSH) test is often considered the diagnostic “gold standard” of thyroid hormone imbalance. A TSH level above or below the "normal" range is required by some medical professionals before initiating a treatment plan with the goal of keeping the TSH level within this range. **However, the TSH test does not reveal cellular hormone status**, rather, it measures pituitary gland function. Research continues to demonstrate that the TSH test is not a sufficient measure of overall thyroid function and can be unreliable [1-6, 23]. Therefore, patients with a thyroid hormone imbalance, clear symptoms, and an "in-range" TSH level may not be properly diagnosed or treated if a medical professional relies on the TSH lab test exclusively.

The **Free T3, Free T4, Reverse T3, and various thyroid antibody** lab tests provide a much better picture of thyroid hormone cellular status and possible immune system dysfunction [4,6]. Through these tests, medical professionals are discovering more about the hypothalamic-pituitary-thyroid (HPA) axis and tissue regulation of thyroid hormones [4,7-8]. See the thyroid panel descriptions below and learn about how your body utilizes thyroid hormone, and how these tests reveal a window into your overall health.

Essential Thyroid Labs



The following labs are the basics for monitoring thyroid hormone status, or for any patient exhibiting [symptoms](#). A normal, in-reference-range result can still leave many patients symptomatic. Therefore, we have researched the optimal ranges from integrative practitioners who specialize in hormone imbalance and are listed below. These are ranges where most patients find symptom resolution.

As you are determining your correct dose, labs should be tested **every 4-6 weeks**. Once optimal, testing **every 6 months** is recommended. For the most consistent and accurate results, testing should always be done in the morning prior to taking food and your thyroid medication [32, 47].

Lab Test	Description	Reference Range*	Optimal Range**
TSH	Measures the amount of thyroid stimulating hormone that is produced by the pituitary gland to activate the thyroid gland to produce thyroid hormones. Does not measure thyroid hormone available to the cells.	.40 - 4.50 mIU/L	2.0 or lower 1.0 - 2.0 .5 - 1.5 NOTE: T3-containing medications may suppress TSH below the lab range [24]. K. Holtorf, MD A. Myers, MD D. Borenstein, MD

Lab Test	Description	Reference Range*	Optimal Range**
Free T3	Measures the amount of unbound (or “active”) T3 thyroid hormone within the cells. Below optimal range is grounds for possible hypothyroidism. Elevated levels are grounds for hyperthyroidism [24].	2.3 - 4.2 pg/mL	3.2 or higher K. Holtorf, MD 3.2 or higher A. Myers, MD 3.2 - 4.2 D. Borenstein, MD NOTE: Many patients even need a result of 3.7 or higher to feel optimal. [30-31].
Free T4	Measures the amount of unbound (or “storage”) T4 thyroid hormone levels within the cells. Below optimal range is grounds for possible hypothyroidism. Elevated levels are grounds for hyperthyroidism [25].	.8 - 1.8 ng/dL	1.3 or higher K. Holtorf, MD 1.1 or higher A. Myers, MD 1.3. - 2.8 D. Borenstein, MD NOTE: Free T4 levels may be dramatically lowered by pure T3-containing medication [28].
Reverse T3	A marker for the inhibition of T3 uptake into the cells and/or a marker of increased T4 to Reverse T3 formation. Reverse T3 can compete at the receptor site with T3 causing cellular hypothyroidism, resulting in symptoms [4, 9-10, 11-14].	8 - 25 ng/dL	<24 ng/dL K. Holtorf, MD <15 ng/dL W. Childs, DO <10:1 (RT3:FT3) A. Myers, MD Find your RT3/FT3 ratio here . NOTE: If >15, or the ratio is low, consider thyroid resistance at the cellular level [29].
TPOAb TgAb	Markers to help determine if the patient has an autoimmune thyroid disease such Hashimoto’s thyroiditis. Clinical reports have noted that antibodies can be elevated despite a ‘normal’ TSH, thus warranting treatment [15-17].	<9 IU/mL <1 IU/mL	Ideally, negative or below reference range. Track every 6 months to monitor autoimmune status. K. Holtorf, MD, A. Myers, MD, Westin Childs, DO

Lab Test	Description	Reference Range*	Optimal Range**
TPOAb TRAb TSI TBII	Markers to help determine if the patient has an autoimmune thyroid disease such as Graves' disease. Clinical reports have noted that antibodies can be abnormal despite a 'normal' TSH, thus warranting treatment [15-17].	<16% Inhibition <140% Baseline <16% Inhibition	Ideally, negative or below reference range. Track every 6 months to monitor autoimmune status. K. Holtorf, MD, A. Myers, MD, Westin Childs, DO

* Reference ranges may vary depending on the lab.

** Optimal ranges based on physician articles and resources. See citations on this page.

Other Essential Labs



Thyroid disease is often concurrent with certain vitamin and mineral deficiencies as well as imbalances with cortisol and sex hormones. Infections such as Candida and Epstein-Barr Virus can also be present and affecting thyroid function. It is common to have any one of these manifestations which may impact your body's immune response as well as utilization and cellular status of thyroid hormone.

The following tests are **highly recommended** with the full thyroid panel listed above. Always consult with a health care practitioner before supplementing.

Lab Test	Description	Reference Range*	Optimal Range**
CMP	Comprehensive Metabolic Panel (CMP) measures glucose levels, electrolyte and fluid balance, kidney and liver function which are important for assessing general chemical balance and metabolism.	Various	Optimal ranges will vary. Anything that is borderline on the high or low end of the reference range should be discussed with your doctor.

Lab Test	Description	Reference Range*	Optimal Range**
CBC	The Complete Blood Count (CBC) assesses the type and number of cells in the blood, especially red blood cells, white blood cells and platelets. A CBC may help to diagnose conditions such as anemia, infections, among others.	Various	Optimal ranges will vary. Anything that is borderline on the high or low end of the reference range should be discussed with your doctor.
Vitamin D3	Vitamin D3, or 25-hydroxyvitamin D, plays a critical role in immunity. Patients who are deficient in Vitamin D are more likely to have elevated thyroid antibody tests [18-19].	30-100 ng/mL	60-70 K. Holtorf, MD 60-80 I. Wentz, PharmD 50-80 A. Romm, MD
Vitamin B12	There is a link between thyroid disease and B12 deficiency with as many as 40 percent of hypothyroid patients who are deficient [21-22]. Hypothyroidism can compromise the ability to absorb vitamin B12.	200 - 1100 pg/mL	700-900 K. Holtorf, MD 700-900 I. Wentz, PharmD NOTE: To measure the amount of B12 stored in tissues, especially those with MTHFR, use the Organic Acids Test [33].
Iron Panel	Total Serum Iron % Saturation Total Iron Binding Capacity (TIBC) Ferritin (iron storage) Iron is one of the most common deficiencies seen in thyroid patients and is important for thyroid hormone conversion and the utilization of iodine [33].	40-190 mcg/dL 11-50% 250 - 450 mcg/dL 10 - 232 ng/mL	mid-range W. Childs, DO 35-38% W. Childs, DO mid-range W. Childs, DO 70-80 W. Childs, DO >60 J. Teitelbaum, MD 80-100 D. Borenstein, MD

Lab Test	Description	Reference Range*	Optimal Range**
Cortisol	Adrenal dysfunction often accompanies thyroid problems. Cortisol can decrease TSH, lowering thyroid hormone production. It can also inhibit the conversion of T4 to active T3, and can increase the conversion of T4 to Reverse T3 [26-27, 35].	Saliva Test Coming soon! DUTCH Test Coming soon!	<u>Saliva and Serum Tests:</u> Optimal Ranges S. Gottfried, MD <u>DUTCH Test:</u> Optimal Ranges W. Childs, MD
Leptin	High leptin values demonstrate resistance to this hormone and could lower the amount of TSH secreted, inhibit T4 to T3 conversion, increase RT3 levels, increase hunger, increase insulin resistance and decrease the ability to breakdown fats (lipids) [36].	4.1 - 25 ng/dl	<10 ng/dl K. Holtorf, MD <10-12 ng/dl W. Childs, DO NOTE: >10 indicates there is leptin resistance and, as with insulin, the higher the leptin the more resistance is present [36].
Magnesium	Optimal levels of magnesium are required for conversion of T4 to T3 and helps the thyroid gland make more T4. A deficiency is related to a goiter or swollen thyroid gland [39].	Magnesium, RBC: 4.0-6.4 mg/dL	6.0-6.5 mg/dL C. Dean, MD NOTE: RBC magnesium provides a more accurate result than serum magnesium. Less than 1% of total body magnesium is found in serum [43].
Zinc	Zinc is required for the synthesis of thyroid hormones. A deficiency can result in hypothyroidism. Thyroid hormones are also essential for the absorption of zinc, and hence hypothyroidism can result in zinc deficiency [40].	Zinc, Serum: 60-130 mcg/dL Zinc, RBC: 9.0-14.7 mg/L	We are currently investigating optimal ranges. NOTE: Zinc competes with copper, so supplementation above 40 milligrams a day may cause a copper deficiency [66].

Lab Test	Description	Reference Range*	Optimal Range**
Iodine	Iodine is a critical and required nutrient for proper thyroid function since it is one of the building blocks of thyroid hormone. Without enough, the thyroid can't produce adequate T1, T2, T3, and T4 [42].	Iodine, Serum: 52-109 ng/mL Click here for other iodine testing methods, such as the urine loading test.	We are currently investigating optimal ranges. NOTE: Do not supplement with iodine unless you are deficient. It is suggested to take zinc and selenium along with iodine [46].
C-Reactive Protein	C-Reactive Protein (CRP) is created by the liver and is a marker for inflammation. CRP is considered a non-specific marker for disease and decreases cellular T3 production [44].	<8.0 mg/L	< 1 K. Holtorf, MD
SHBG	Sex Hormone Binding Globulin (SHBG) regulates and transports sex hormones, estrogen and testosterone. Its production also responds to thyroid and estrogen hormones which is why it's another marker for identifying possible thyroid tissue levels [37-38].	<u>Female</u> 12 - 158 nmol/L depending on age <u>Male</u> 10-166 depending on age	<u>Female</u> 60 - 80 >70 W. Childs, DO K. Holtorf, MD <u>Male</u> >25 K. Holtorf, MD NOTE: SHBG should increase proportionally with thyroid medication. If not, thyroid resistance might be occurring. [41].
DHEA	DHEA is a hormone secreted mainly by the adrenal glands. There is also a sulfated form called DHEA-S. DHEA is a precursor to sex hormones and low levels are often seen in thyroid patients. DHEA affects the immune system, inflammation levels, as well as insulin sensitivity, blood flow, and cognitive function [48].	<u>Female</u> 65-380 mcg/dL, Serum <u>Male</u> 280-640 mcg/dL, Serum NOTE: Serum DHEA testing is protein bound, while saliva testing measures the free form of DHEA.	<u>Female</u> Top 1/2 of normal range, approximately 200-380 S. Gottfried, MD <u>Male</u> We are currently investigating optimal ranges.

Lab Test	Description	Reference Range*	Optimal Range**
<p style="text-align: center;">Sex Hormone Panel</p>	<p>The hormones of the body are an interrelated orchestra. If one hormone level is not optimal, this could affect other hormone levels, including thyroid hormone. A sex hormone panel should include:</p> <p>Estradiol Estrogen, Total Pregnenolone Progesterone Testosterone (Free and Total) Luteinizing Hormone Follicle Stimulating Hormone SHBG DHEA-S</p>	<p>Lab ranges will vary. Some practitioners prefer saliva testing, while others prefer serum testing. Work with a good functional medical doctor for your specific needs.</p>	<p>Saliva and Serum Testing: Optimal Ranges S. Gottfried, MD</p>
<p style="text-align: center;">Infection Labs</p>	<p>Chronic infections cause irregularities of the immune system which makes it less able to fight foreign invaders, but more likely to attack the body. Chronic infections are often seen in autoimmune thyroid patients and should be tested to screen for infectious root causes [45].</p> <p>Candida Epstein-Barr Lyme disease H. pylori Herpes Yersinia enterocolitica Hepatitis C</p>	<p>Lab ranges will vary. Work with a good functional doctor for your needs.</p> <p>NOTE: Conventional testing misses Lyme more than 50% of the time. Please see a Lyme-literate specialist and use either the DNA Connections test or IGeneX.</p>	<p>Optimal ranges will vary. Anything that is borderline on the high or low end of the reference range should be discussed with your doctor.</p>

* Reference ranges may vary depending on the lab.

** Optimal ranges based on physician articles and resources. See citations on this page.

Need Help With Your Labs?



Order Full Thyroid Labs

Through our partner lab, you can order your own full thyroid panel at a discounted rate. Coming soon to our website!

Schedule A Phone Consult

Doctor phone consults are coming soon to our website to help you understand your labs and to create a personalized plan.

References

1. Becker DV, Bigos ST, Gaitan E, Morris JC, Rallison ML, Spencer CA, Sugarawa M, Van Middlesworth L, Wartofsky L. Optimal use of blood tests for assessment of thyroid function. *Journal of the American Medical Association*. 1993 Jun 2; 269: 273 .
2. Kalra S, Khandelwal, SK. Why are our hypothyroid patients unhappy? Is tissue hypothyroidism the answer? *Indian Journal of Endocrinology and Metabolism*. 2011 July; 15 (Suppl2): S95–S98.
3. Chopra IJ. Euthyroid sick syndrome: Is it a misnomer? *Journal of Clinical Endocrinology and Metabolism*. 1997; 82(2):329–34.
4. Schwartz E, Morelli V, Holtorf K. Hormone Replacement Therapy in the Geriatric Patient: Current State of the Evidence and Questions for the Future. Estrogen, Progesterone, Testosterone, and Thyroid Hormone Augmentation in Geriatric Clinical Practice. *Clinics in Geriatric Medicine*. 2011; 561–575.
5. De Los Santos ET, Mazzaferri EL. Sensitive thyroid-stimulating hormone assays: Clinical applications and limitations. *Comprehensive Therapy*. 1988; 14(9): 26-33.
6. Alevizaki M, Mantzou E, Cimponeriu AT, Alevizaki CC, Koutras DA. TSH may not be a good marker for adequate thyroid hormone replacement therapy. *Wiener klinische Wochenschrift*. 2005; 117/18:636-640.
7. McGrath P, Quitkin P, Stewart JW, Asnis G, Novacenko H, Puig-Antich. J A comparative study of the pituitary TSH response to thyrotropin in outpatient depressives. *Psychiatry Research*. Volume 12, Issue 3, July 1984, Pages 185-193.
8. Fliers E, Alkemade A, Wiersinga WM. The hypothalamic-pituitary-thyroid axis in critical illness. *Best Practice & Research Clinical Endocrinology & Metabolism* 2001;15(4):453–64.
9. Becker RA, Wilmore DW, Goodwin CW Jr, Zitzka CA, Wartofsky L, Burman KD, Mason AD, Pruitt BA. Free T4, Free T3, and Reverse T3 in Critically Ill, Thermally Injured Patients. *Journal of Trauma-Injury Infection & Critical Care*. 1980 Sep;20(9):713-21.

10. De Los Santos ET, Mazzaferri EL (1988). Sensitive thyroid-stimulating hormone assays: Clinical applications and limitations. *Comprehensive Therapy*. 1988; 14(9): 26-33.
11. van den Beld AW, Visser T, Feelders R, Grobbee R, Lamberts, WJ. Effect of Exogenous Thyroid Hormone Intake on the Interpretation of Serum TSH Results. *The Journal of Clinical Endocrinology & Metabolism*. 90 (12): 6403-6409.
12. Chopra IJ, Solomon DH, Hepner GW, Morgenstein AA. Misleadingly low free thyroxine index and usefulness of reverse triiodothyronine measurement in nonthyroidal illnesses. *Ann Intern Med*. 1979;90(6):905–12.
13. Linnoila M, Lamberg BA, Potter WZ, Gold PW, Goodwin FK. High reverse T3 levels in manic and unipolar depressed women. *Psych Res*. 1982;6:271-276.
14. Forestier E, Vinzio S, Sapin R, Schlienger JL, Goichot B. Increased Reverse T3 is Associated With Shorter Survival in Independently-living Elderly. The Alsanut Study. *Eur J Endocrinol* 2009;160(2):207-14.
15. Promberger R, Hermann M, Ott J. Hashimoto's Thyroiditis in Patients With Normal Thyroid-stimulating Hormone Levels. *Expert Rev Endocrinol Metab*. 2012;7(2):175-179.
16. Ott J, Promberger R, Kober F, Neuhold N, Tea M, Huber JC, Hermann M. Hashimoto's thyroiditis affects symptom load and quality of life unrelated to hypothyroidism: a prospective case–control study in women undergoing thyroidectomy for benign goiter. *Thyroid*. 21, 161–167 (2011).
17. Shomon M. Do You Need Preventive Thyroid Treatment? Treating Antibodies When TSH is Normal. *About.com Thyroid Disease*. February 10, 2014. Retrieved from <http://thyroid.about.com/od/hypothyroidismhashimotos/a/preventative.htm>.
18. Kivity S, Agmon-Levin N, Zisappl M, Shapira Y, Nagy EV, Dankó K, Szekanez Z, Langevitz P, Shoenfeld Y. Vitamin D and autoimmune thyroid diseases. *Cellular & Molecular Immunology*. 2001. 8(3): 243-7.
19. Bozkurt NC, Karbek, B., Ucan B, Sahin M, Cakal E, Ozbek M, Delibasi T. The Association Between Severity of Vitamin D Deficiency and Hashimoto's Thyroiditis. *Endocrine Practice*; 2013 Jan 21:1-14.
20. Zaidi S. *Power of Vitamin D*. 2013 (2nd Edition). Pages 75, 82-83,200-201.
21. Ness-Abramof, R, Nabriski, DA, Braverman, LE, Shilo, Lotan MD, Weiss, E, Reshef T, Shapiro, MS, Shenkman, L. Prevalence and Evaluation of B12 Deficiency in Patients with Autoimmune Thyroid Disease. *American Journal of the Medical Sciences*. 2006. Volume 332 - Issue 3; pp 119-122.
22. Jabbar A, Yawar A, Waseem S, Islam N, UI Haque N, Zuberi L, Khan A, Akhter J. Vitamin B12 deficiency common in primary hypothyroidism. *Journal of Pakistan Medical Association*. May 2008 ;58(5):258-61.
23. Holtorf, K. Reverse T3 is the best measurement for tissue thyroid levels. Report on the 2005 study, Thyroid hormone concentrations, disease, physical function and mortality in elderly men. Holtorf Medical Group. 2014. Retrieved from www.holtorfmed.com/download/thyroid-fatigue-and-weight-loss/Reverse_T3_is_the_Best_Measurement_of_Tissue_Thyroid_Level.pdf.
24. Shomon, M. Thyroid Blood Tests. *About.com*. Updated May 29, 2014. Retrieved from <http://thyroid.about.com/od/gettestedanddiagnosed/a/bloodtests.htm>.
25. Living with Graves' Disease. Updated February 1, 2010. Retrieved from <http://www.livingwithgravesdisease.com/diagnosis/lab-tests>.
26. Holtorf Medical Group. Treating Adrenal Dysfunction with Cortisol. Retrieved August 6, 2014 from <http://www.holtorfmed.com/adrenal-health-treating-adrenal-dysfunction-with-cortisol/>

27. National Integrated Health Associates. Metabolic Therapy: Thyroid, Adrenal and Hormone Connection. Retrieved August 7, 2014 from www.nihadc.com/health-programs/metabolic-therapy-thyroid-adrenal-hormone-correction.html
28. Appelhof, B. C., Fliers, E., Wekking, E. M., Schene, A. H., Huyser, J., Tijssen, J. G., ... & Wiersinga, W. M. Combined therapy with levothyroxine and liothyronine in two ratios, compared with levothyroxine monotherapy in primary hypothyroidism: a double-blind, randomized, controlled clinical trial. *The Journal of Clinical Endocrinology & Metabolism*. 2005. 90(5), 2666-2674.
29. Dr. Westin Childs. 7 Reasons Your Thyroid Lab Tests Are Anything But Normal. Retrieved May 9, 2018 from <https://www.restartmed.com/thyroid-lab-tests/>.
30. Holtorf Medical Group. What You Need to Know About the 4 "T's" to Thyroid Testing. Retrieved May 9, 2018. <https://www.holtorfmed.com/what-you-need-to-know-about-the-4-ts-to-thyroid-testing/>
31. Manhattan Integrative Medicine. Are Your Thyroid Levels Optimal?. Retrieved May 9, 2018. <https://www.facebook.com/ManhattanIntegrativeMedicine/photos/a.656584967766741.1073741825.111220995636477/674988619259709/?type=3&theater>
32. Dr. Izabella Wentz, PharmD. Top 10 Thyroid Tests and How to Interpret Them. Retrieved May 9, 2018. <https://thyroidpharmacist.com/articles/top-6-thyroid-tests/>
33. Amy Myers, MD. Everything You Need to Know About B12 Deficiency. Retrieved May 10, 2018. <https://www.amymyersmd.com/2013/08/everything-need-know-b12-deficiency/>
34. Dr. Westin Childs. Why Hypothyroidism is Worse With Iron Deficiency. Retrieved May 10, 2018. <https://www.restartmed.com/hypothyroidism-iron-deficiency/>
35. Amy Myers, MD. The Adrenal-Thyroid Connection. Retrieved May 10, 2018. <https://www.amymyersmd.com/2017/03/adrenal-thyroid-connection/>
36. Holtorf Medical Group. Leptin: The Secret Behind Weightloss. Retrieved May 11, 2018. <https://www.holtorfmed.com/the-secret-behind-leptin-and-how-it-affects-weight-loss/>
37. Dr. Weston Childs. SHGB Lab Test Guide. Retrieved May 11, 2018. <https://www.restartmed.com/shbg/>
38. Holtorf Medical Group. SHBG: Broadening the Scope of Hypothyroid Testing. Retrieved May 11, 2018. <https://www.holtorfmed.com/shbg-broadening-the-scope-of-hypothyroid-testing/>
39. Hypothyroid Mom. Two Vital Nutrients for Your Thyroid: Not the Usual Suspects. Retrieved May 11, 2018. <https://hypothyroidmom.com/two-vital-nutrients-for-your-thyroid-not-the-usual-suspects/>
40. Ambooken, B, Binitha, MP, Sarita, S. Zinc Deficiency Associated with Hypothyroidism: An Overlooked Cause of Severe Alopecia. *International Journal of Trichology*. 2013 Jan-Mar; 5(1): 40–42.
41. Shomon, M. Optimal Treatment for Hypothyroidism: Kent Holtorf, MD. Retrieved May 11, 2018. <https://www.verywellhealth.com/optimal-treatment-for-hypothyroidism-kent-holtorf-md-3233006>
42. Amy Myers, MD. Thyroid Health Part VII: Four Essential Nutrients for Thyroid Function. Retrieved May 12, 2018. <https://www.amymyersmd.com/2015/08/thyroid-health-part-vii-four-essential-nutrients-for-thyroid-function/>
43. The Quantified Body. The Tricky Art of Testing For and Fixing Magnesium Deficiency: Episode 17 with Dr. Carolyn Dean. Retrieved May 12, 2018. <https://thequantifiedbody.net/magnesium-deficiency-dr-carolyn-dean/>

44. Holtorf Medical Group. Tests Can Reveal Hidden Causes of Weight Loss Failure. Retrieved May 12, 2018.
<https://www.holtorfmed.com/tests-can-reveal-hidden-causes-of-weight-loss-failure/>
45. Holtorf Medical Group. Your Immune System and Thyroid: Are They At War? Retrieved May 14, 2018.
<https://www.holtorfmed.com/tests-can-reveal-hidden-causes-of-weight-loss-failure/>.
46. Dr. Westin Childs. Warning Signs of Iodine Deficiency and How It Affects Your Thyroid. Retrieved May 15, 2018.
<https://www.restartmed.com/iodine-deficiency/>
47. Dr. Izabella Wentz, PharmD. How To Get Accurate Lab Tests When Taking Thyroid Medications. Retrieved May 24, 2018.
<https://thyroidpharmacist.com/articles/how-to-get-accurate-lab-tests-when-taking-thyroid-medications/>
48. Natural Endocrine Solutions. DHEA and Thyroid Health. Retrieved May 24, 2018.
<http://www.naturalendocrinesolutions.com/articles/dhea-thyroid-health/>

DISCLAIMER: The information contained on the website and social media pages of ThyroidChange is for general information only and is not intended or implied to be a substitute for professional medical advice, diagnosis or treatment. ThyroidChange, guest writers, and partners are NOT responsible or liable for any advice, course of treatment, or supplement regimen that visitors choose to embark on. It is always recommended to review any information obtained through ThyroidChange with your healthcare practitioner.