

Errors in Modern Thyroid Endocrinology

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A Different Perspective



The Information War Against Natural Thyroid



Slides Available at: <http://jeffreydachmd.com>



War Between Patented Drugs and Natural Medicine (no Patent)



- Mainstream Medicine is Based on Synthetically Altered Patented Drugs.
- Excludes Natural Substances which Cannot be Patented



Jeffrey Dach MD
Conflict of Interest Statement
-NONE

I Receive No Financial Compensation
from any manufacturer of thyroid
meds, such as Levothyroxine, Cytomel
or NDT.



\$6.5 billion in payments since 2013

**Is Your Doctor
Being Bribed by
Big Pharma?
Find Out NOW**



✓ [OpenPaymentsData.CMS.gov](https://openpaymentsdata.cms.gov)



Conflict of Interest ?

ATA, Endocrine Society

- ATA itself receives substantial financial support from three drug companies.
- **Pfizer, AbbVie, and Akrimax**
- They make **Levothyroxine**, the drug that the Guidelines claim are the
- “standard of care”.



Funding for the Endocrine Society

AbbVie Inc. Akrimax Pharmaceuticals Alexion
Pharmaceuticals, Inc. Amarin Pharma Inc. Bayer HealthCare
Boehringer Ingelheim Pharmaceuticals, Inc. & Lilly USA, LLC
Burroughs Wellcome Fund Corcept Therapeutics Incorporated
Dexcom, Inc. Eisai Inc. Endo Pharmaceuticals Inc.
Esaote North America, Inc. Ethicon Endo-Surgery, Inc.
FNA Path Genentech, Inc. Janssen Pharmaceuticals, Inc.
Lilly USA, LLC Merck & Co., Inc. Mindray Thyroid Ultrasound by
CSD Novartis Pharmaceuticals Corporation
Noven Pharmaceuticals, Inc. Novo Nordisk Inc. NPS
Pharmaceuticals, Inc. Pfizer, Inc. Salix Pharmaceuticals, Inc.
sanofi-aventis U.S. Inc sanofi-aventis U.S. Inc, Regeneron
Pharmaceuticals Alliance Takeda Pharmaceuticals U.S.A., Inc.
Toshiba Head and Neck Ultrasound
Veracyte, Inc.



Endocrine Society Position Statement 2006 Conflict of Interest?

- “In general, desiccated thyroid hormone or thyroid extract, combinations of thyroid hormones, or triiodothyronine **should not be used** as thyroid replacement therapy.”
- (Quote from 2006 Endocrine Society Position Statement.)



Industry Conflict of Interest



Conflict of Interest ?

2012 Position Statement

American Association of Endocrinologists and the ATA (American Thyroid Association) regarding the use of natural desiccated thyroid, which says:

“There is **no evidence** to support using desiccated thyroid hormone in preference to L-thyroxine monotherapy in the treatment of hypothyroidism and therefore desiccated thyroid hormone should not be used for the treatment of hypothyroidism.” (quote)



Conflict of Interest ?

ATA 2014 Position Statement

ATA Guidelines For Treatment of
Hypothyroidism Dec. 2014

“We recommend that **levothyroxine (T4 only)** be considered as routine care for patients with primary hypothyroidism, in preference to use of thyroid extracts (NDT).”



My Endocrinologist Won't Listen to Me



Impaired cognition,
Fatigue
Difficulty losing weight
T4 Only Meds

McAninch, Elizabeth A., et al. "Prevalent polymorphism in thyroid hormone-activating enzyme leaves a genetic fingerprint that underlies associated clinical syndromes." *The J Clin Endo & Metab* 100.3 (2015): 920-933.

Why is My Doctor Like This ?



Unfortunately therapy with L-T4 alone does not resolve symptoms in all hypothyroid patients, with approximately 12% of the patients remaining symptomatic despite normalization of serum TSH and TH levels (2, 3).

Impaired cognition, fatigue, and difficulty losing weight are the main residual symptoms of these patients, for which we lack understanding and have no mechanistic explanation.

McAninch, Elizabeth A., et al. "Prevalent polymorphism in thyroid hormone-activating enzyme leaves a genetic fingerprint that underlies associated clinical syndromes." *The Journal of Clinical Endocrinology & Metabolism* 100.3 (2015): 920-933.



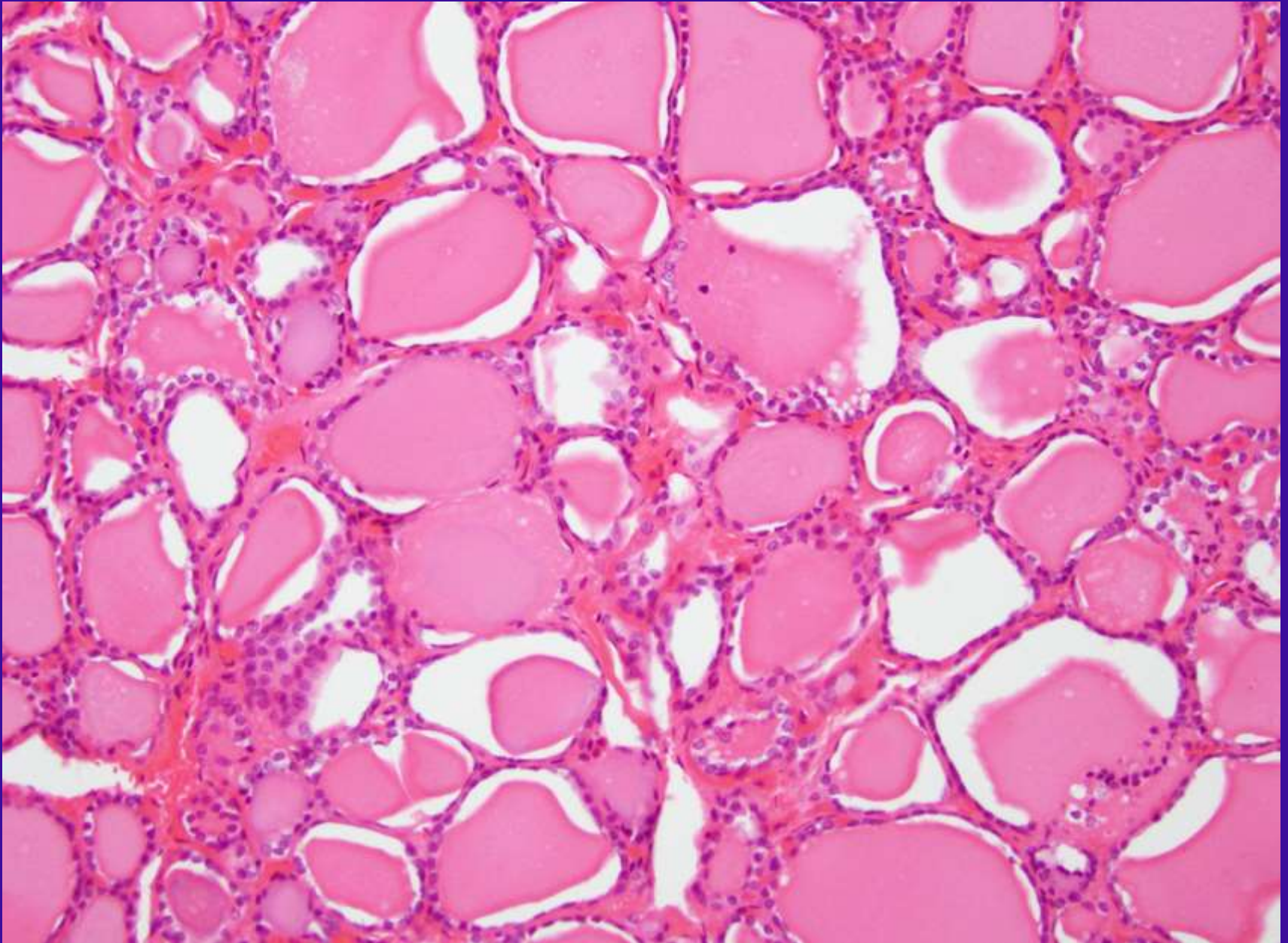
Nature-Throid – RLC labs



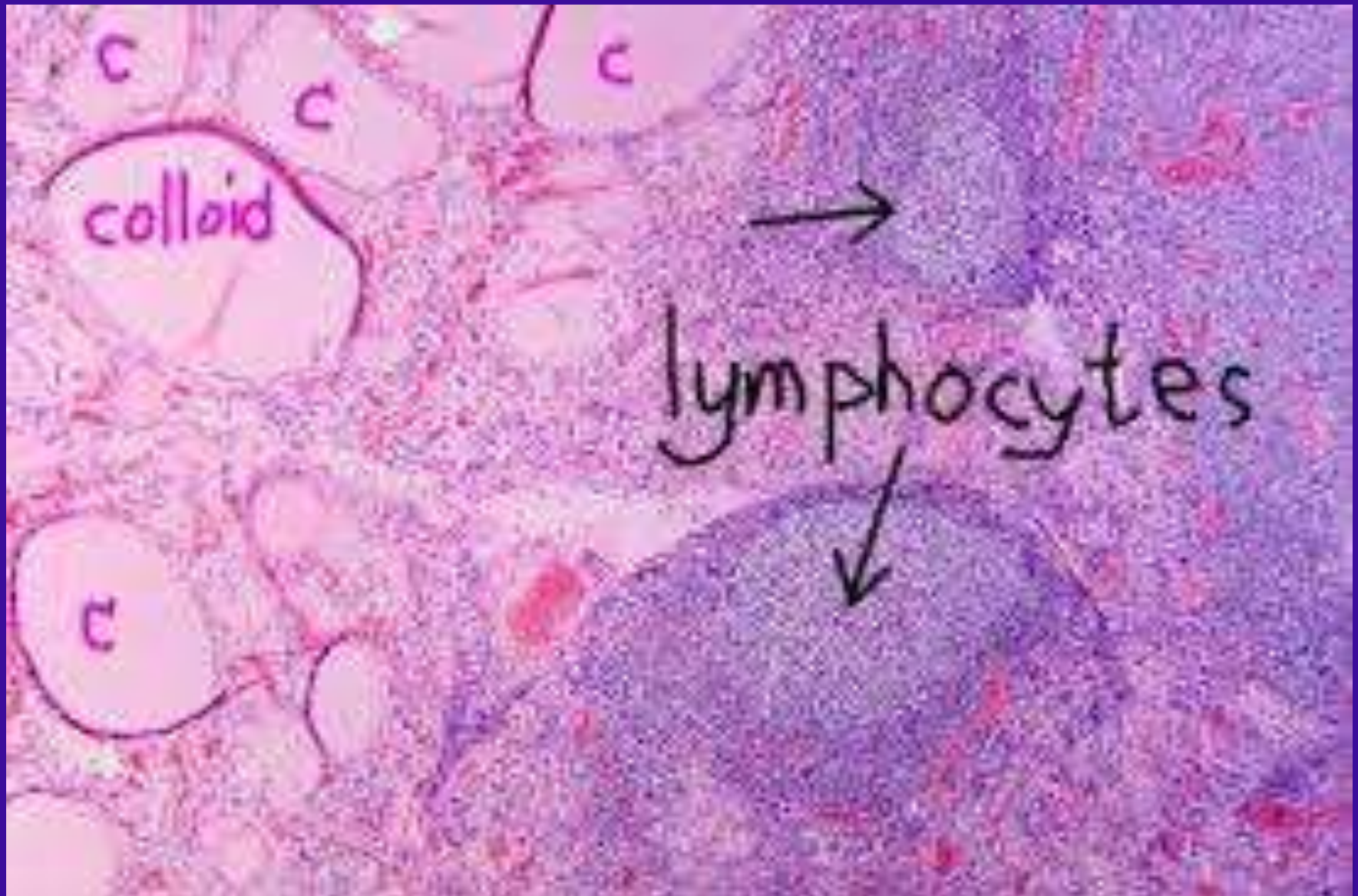
- Natural Desiccated Thyroid - Porcine
- One Grain Tab (65mg)
- 38 Mcg **T4**- $T_{1/2}=7$ Days
- 9 Mcg **T3**- $T_{1/2} = 1$ day
- Dosage 1-4 grains/day
- TSH, FT4, FT3, Abs



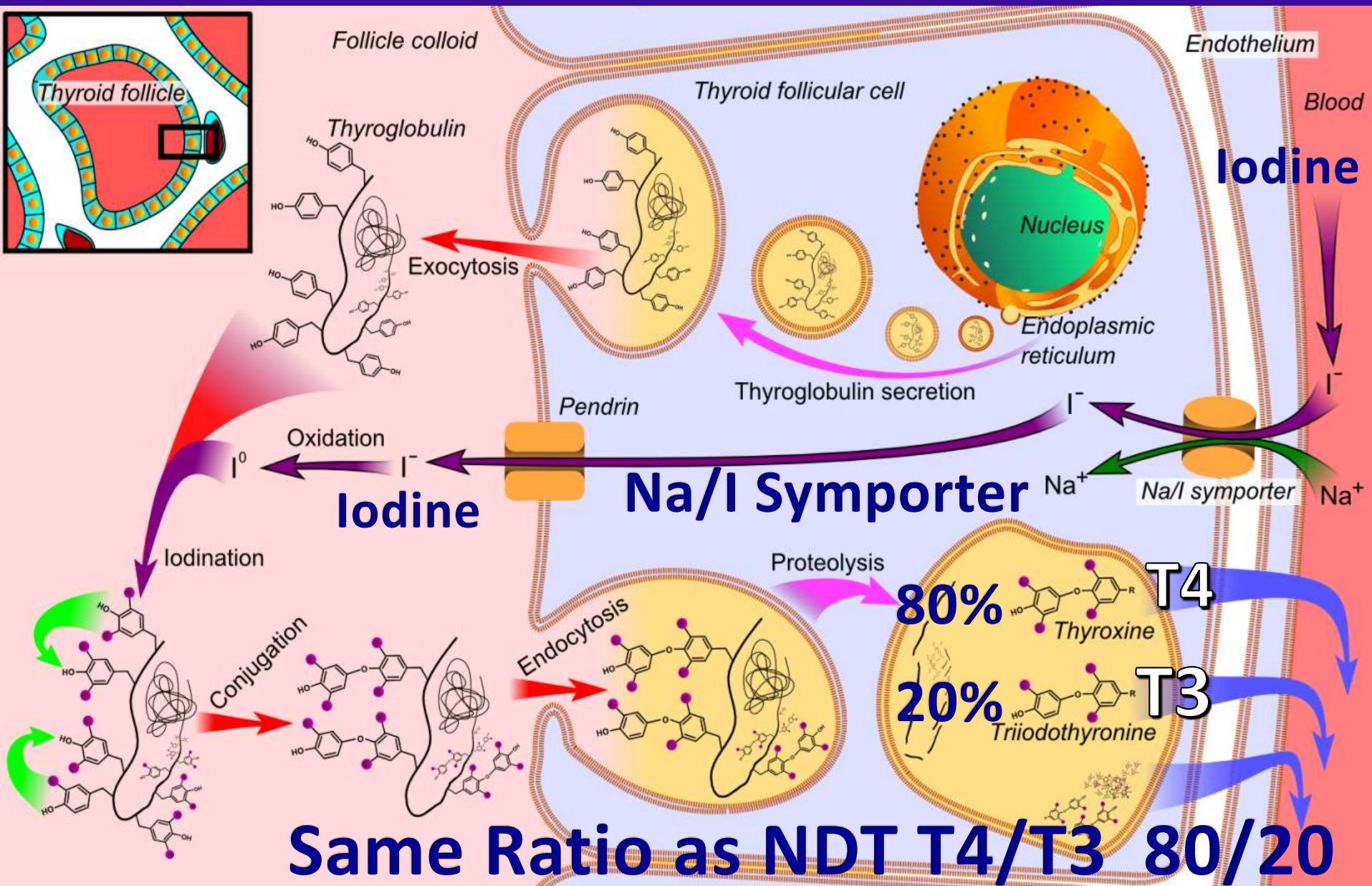
Normal Thyroid Gland

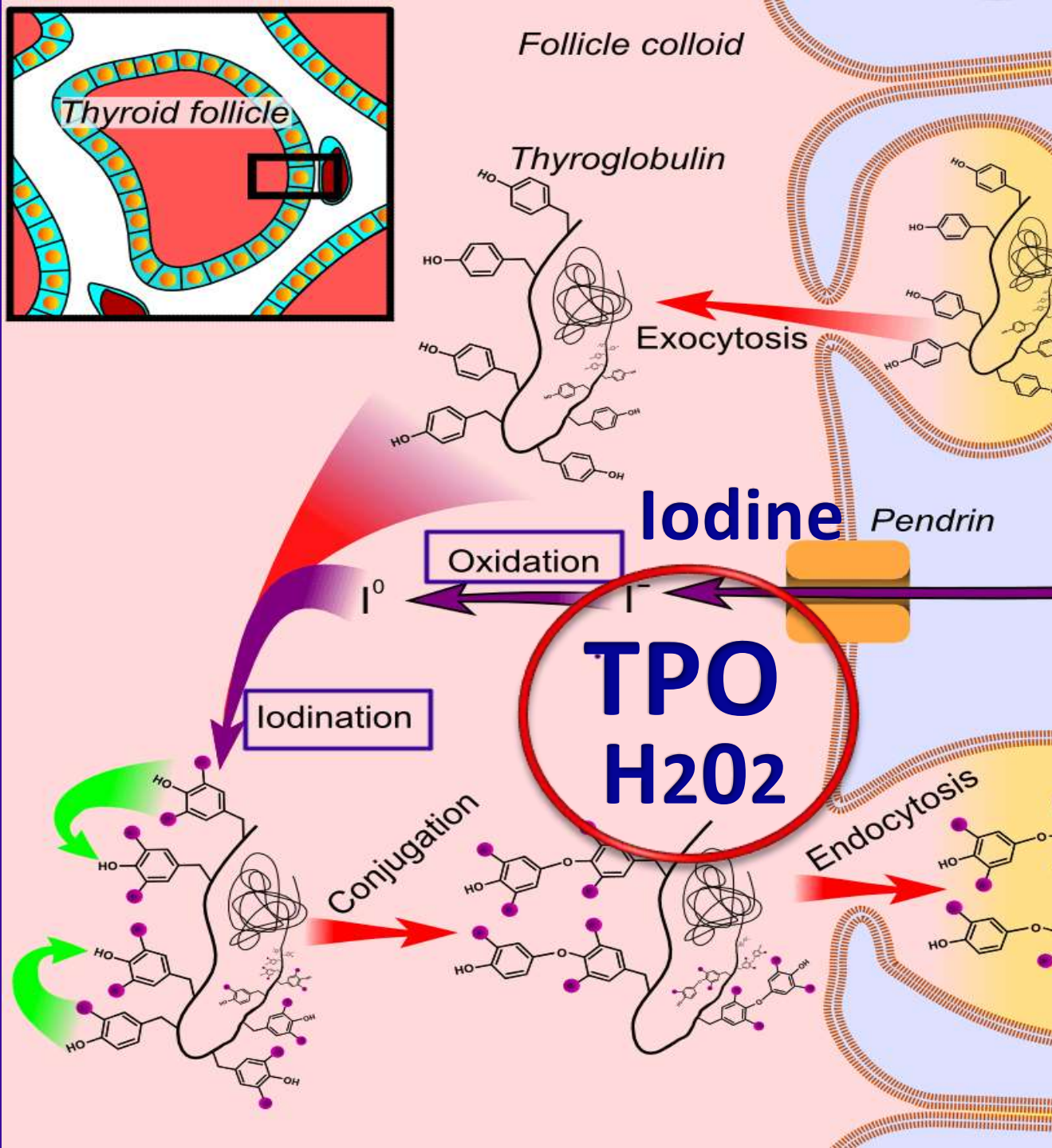


Microscopic View of Thyroid



Production of Thyroid Hormone





TPO enzyme
Oxidizes
Iodine with
H₂O₂ as
substrate,
Organifies
Iodine to
Thyroglobulin.
Blocked by
Methimazole.
HD Iodine
Prevents
H₂O₂,
Prevents
organification.

Protective Effect of Selenium

- Various thyroid pathologies can be explained by overproduction and lack of degradation of H₂O₂, such as thyroiditis, cancer.
- Song, Yue, et al. "Roles of hydrogen peroxide in thyroid physiology and disease." The Journal of Clinical Endocrinology & Metabolism 92.10 (2007): 3764-3773.

H2O2 Detoxification – Seleno-Proteins

- Intracellular H2O2 detoxification
- Selenoproteins: GSH peroxidases and thioredoxin reductases
- Catalase

Song, Yue, et al. "Roles of hydrogen peroxide in thyroid physiology and disease." *The Journal of Clinical Endocrinology & Metabolism* 92.10 (2007): 3764-3773.

Excess Iodine in Selenium Deficiency

- Excessive iodine intake:
- Induce Goiter,
- lead to thyroiditis,
- worsen lymphocytic infiltration,
- Damage to the thyroid follicular structure in a dose-dependent manner in autoimmune-prone NOD.H-2h4 mice.

- Teng, X., et al. "Experimental study on the effects of chronic iodine excess on thyroid function, structure, and autoimmunity in autoimmune-prone NOD.H-2h4 mice." Clinical and experimental medicine 9.1 (2009): 51.

Selenium Alleviates Toxic Effects of Iodine

- Supplemental Selenium alleviates the toxic effects of excessive iodine on thyroid."
- (Xu, Biol Trace Element Res 141.1-3 (2011): 110-118.)

Iodine Suppresses Thyroid Function

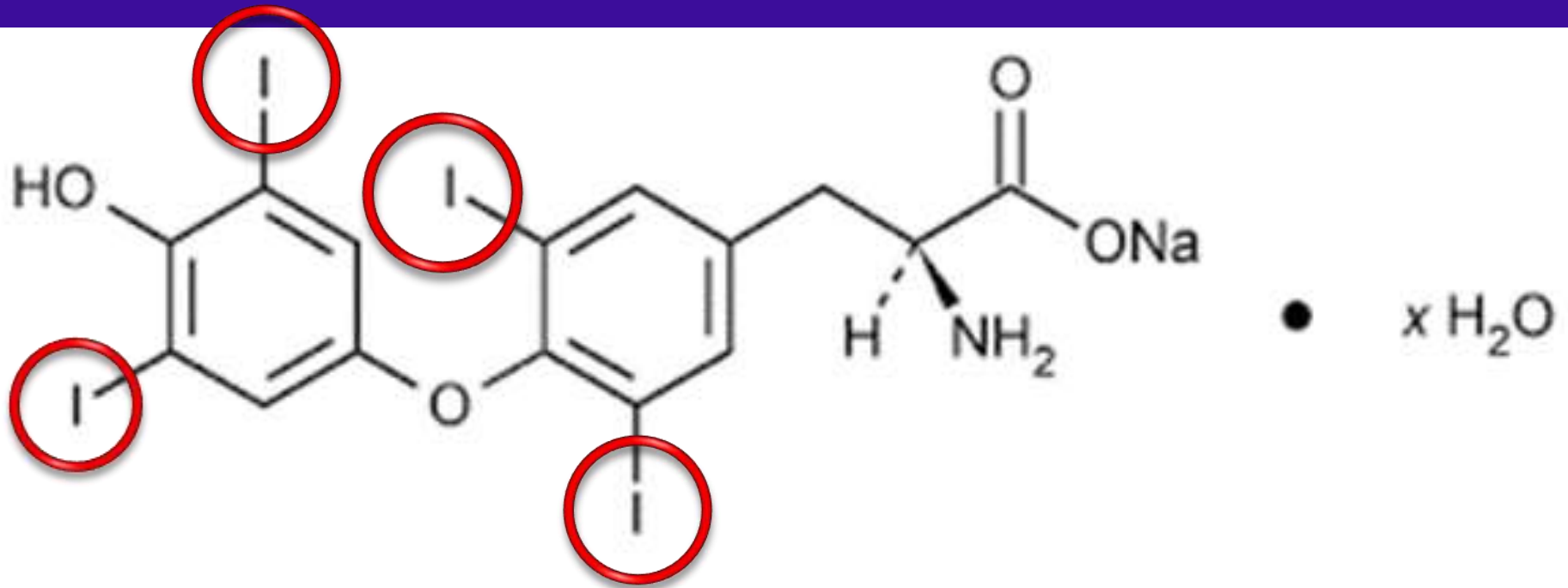
- Elevation of TSH.
- Reverses after stopping iodine.
- Reduces TPO activity
- Reduces Iodine Uptake
- Reduces Iodine Organification
- Hashimotos, Graves more sensitive to suppressive effect of iodine.

TAJIRI, JUNICHI, et al. "Studies of Hypothyroidism in Patients with High Iodine Intake." J Clin Endo & Metab 63.2 (1986): 412-417.

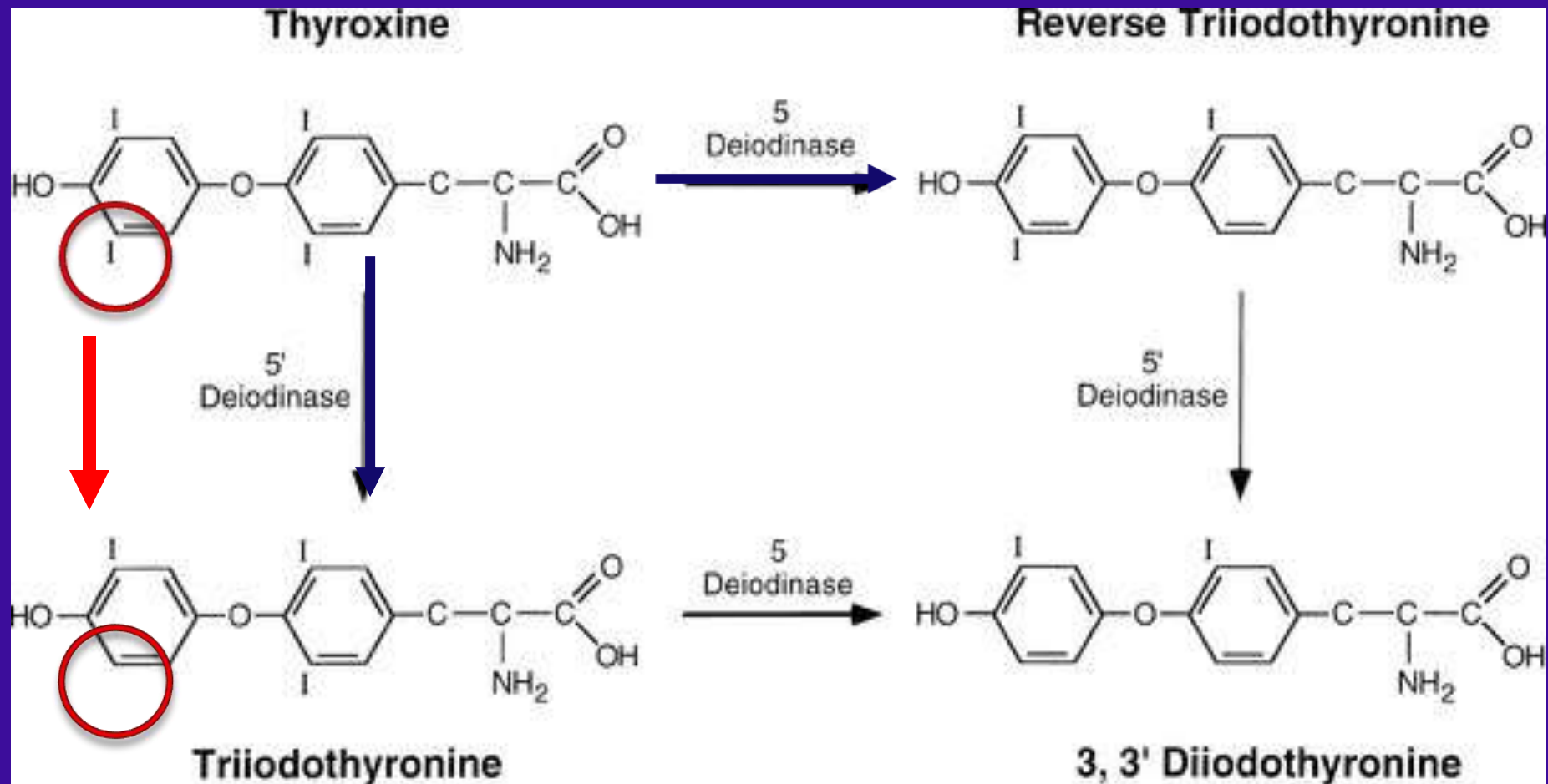
Man, N., et al. "Long-term effects of high iodine intake: inhibition of thyroid iodine uptake and organification in Wistar rats." Zhonghua 86.48 (2006): 3420-3424.

Levothyroxine (T4 Only)

4-Iodines Attached to 2 Tyrosines



Conversion of T4 to T3 – De-Iodinase Enzyme



Errors in Thyroid Endocrinology

Doing the Wrong Lab Tests

• **NDT Model**

- TSH
- Free T3
- FreeT4
- TPO Thyro Abs
- TSI TBII
- Hold Meds,
Fasting, Early

• **Insurance Model**

- TSH , FT4 Only
- Keep TSH in Range
- Adjust Dosage of Synthroid Up or Down Keeping TSH in Range.



Errors in Thyroid Endocrinology

Omitting Lab Tests

• **NDT Model**

- Spot Iodine
- Serum Selenium
- Anti-Gliadin Abs
- Serum B12
- Fe/Ferritin
- D3
- Follow TPO Abs

• **Insurance Model**

- TSH , FT4 Only
- Look at TSH, Adjust Dosage of Synthroid Up or Down



NDT -How I Do It

Dosage Based on Body Weight

Start Low and Gradually Increase Dosage

90-120 Pounds 1 tab
120-140 pounds 2 tabs
140-180 pounds 3 tabs
Over 200 pounds 4 tabs
etc

- One Grain Tab (65 mg.)
- Half tab daily x one week
- One tab daily x one week
- 1 1/2 tabs daily x one week
- Two tabs daily

NDT -How to Do Thyroid Labs

- Check labs at 6 weeks after starting NDT-
- Hold Thyroid Meds in AM before LABS – This Avoid Spikes in Free T3 and FreeT4!
- Do Labs Early . Pt Arrives 15 min before lab opens
- Expect to see TSH Suppression. This is OK.
- Free T3 Above 310
- Free T4 Above 1.0
- Clinical Findings – Patient Should Experience No Resting Tachycardia.

NDT -How I Do It -Important

Review Symptoms of Thyroid Excess

- Spend 5-10 minutes with patient reviewing symptoms of thyroid excess
- Looking For: Resting Tachycardia
- Will be Obvious to Patient, Instruments not needed
- Upon Awakening in AM – Good time to check !
- Exercise induced Tachycardia Does Not Count !
- Hold Thyroid Pill in Am if Resting Tachycardia Noted
- Resume NDT Next day at Reduced Dosage
- You Must Screen Patient for Ability to Do this !
- Dementia pts are NOT Candidates for NDT !!

Adverse Effects of Thyroid Pills

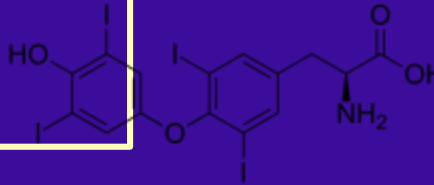
Thyroid Excess

- Tachycardia, Palpitations, Fluttering, Atrial fibrillation
- Nervousness, Panic Attacks
- Insomnia
- Loose Stools, Diarrhea
- Dreaded Atrial Fibrillation

NDT vs. Levo-Thyroxine

1 Grain (65 mg)
38 mcg T4
9 mcg T3

100 Mcg T4



NDT vs. Levothyroxine (T4 Only)

● NDT

- Shorter Half life by virtue of T3 Content
- 24 hrs Half Life.
- Safer.
- Excess Symptoms resolve Within Hours

Levo-T4 Only

- Levo T4 –
Longer Half life
7 days
- Less Safe
- Excess Symptoms
Resolves after Days.
- Fourth most prescribed
drug in America with 70
million prescriptions.

Safety of NDT vs. LevoThyroxine (T4-only)

Half Life of Thyroid Hormones

- T4 - 7 days
- T3 – 1 to 1.5 days
- NDT is safer because of shorter half Life. If pt. experiences tachycardia at rest instructed to hold NDT for the day.

NDT vs. Levo-Thyroxine

1 Grain (65 mg)

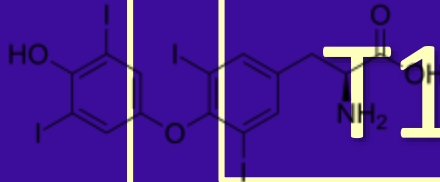
38 mcg T4

9 mcg T3

T_{1/2} 1 day

100 Mcg T4

T_{1/2} -7 days



Medical Model

Determines Thyroid Usage

- **CASH Model-NDT**

- More Time w Pt.
- 30 -60 min.
- **Suppressed TSH**
Look at FT3, FT4
- 5 min explaining risks and adverse effects

- **Insurance Model**
- **T4-Mono and TSH**

- Less Time w Pt.
- 3-10 min.
- Keep TSH in Range,
Adjust T4 Dosage
- No time to explain adverse effects



Errors in Modern Thyroid Endocrinology



Refugees and Escapees from Modern Endocrinology



Errors in Thyroid Endocrinology

T4 Monotherapy and TSH

Reliance of T4 Only-Monotherapy (Levo or Synthoid) (Gullo,2011)

Reliance on TSH Only to Monitor Treatment.
(Peterson,Bianco 2016)

TSH Suppression may be needed for Adequate Treatment.(Ito 2012)

NDT –Natural Dessicated Thyroid Better Choice.
(Hoang, 2013)

Shorter Half Life-makes NDT safer choice.

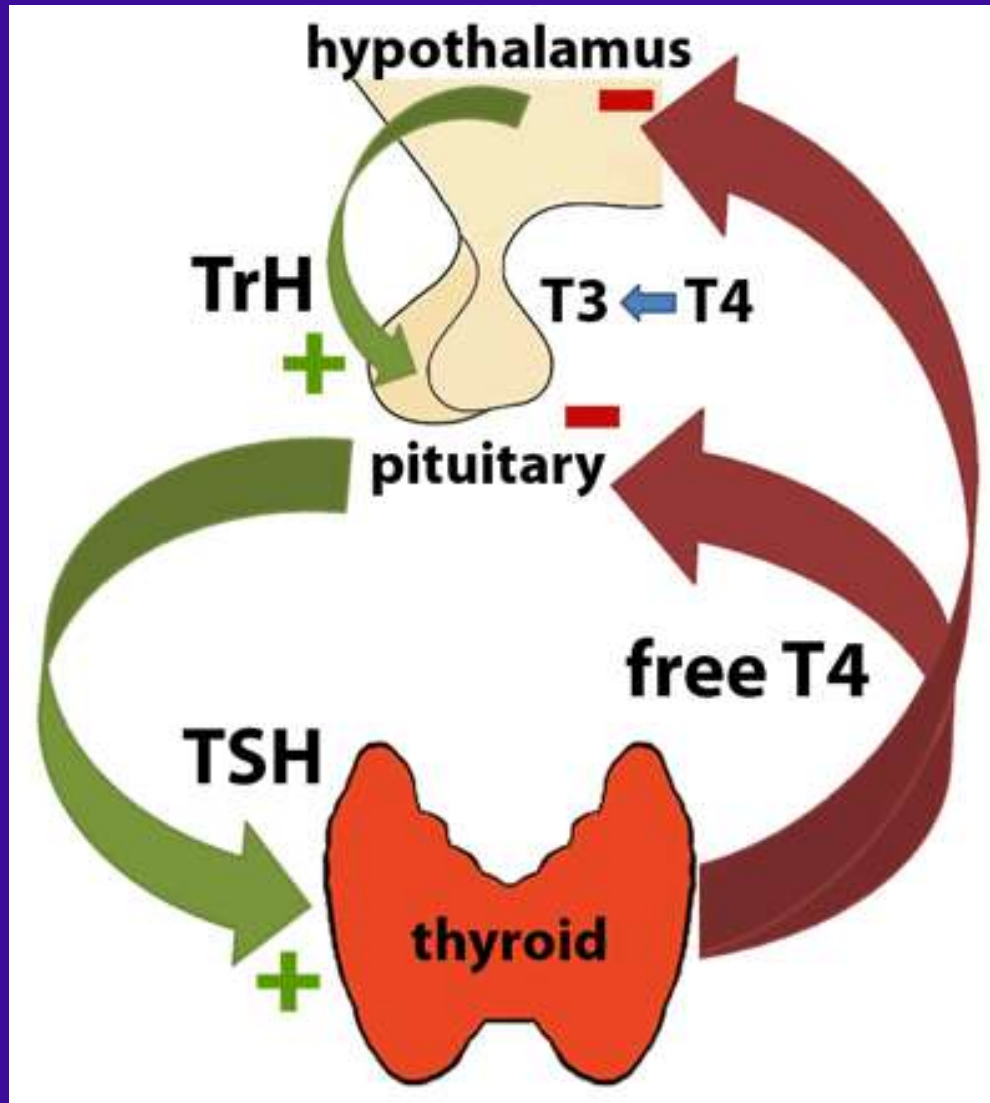
NDT Combines T3 and T4 - more robust for poor converters.



References T4 Monotherapy

- Gullo, Damiano et al. "Levothyroxine Monotherapy Cannot Guarantee Euthyroidism in All Athyreotic Patients." Ed. Marian Ludgate. PLoS ONE 6.8 (2011): e22552. PMC. Web. 23 Dec. 2014.
More than 20% of these patients, despite normal TSH levels, do not maintain FT3 or FT4 values in the reference range, reflecting the inadequacy of peripheral deiodination to compensate for the absent T3 secretion."
- Peterson, Sarah J., Elizabeth A. McAninch, and Antonio C. Bianco. "Is a Normal TSH Synonymous With "Euthyroidism" in Levothyroxine Monotherapy?." The Journal of Clinical Endocrinology & Metabolism 101.12 (2016): 4964-4973.
- Ito, Mitsuru, et al. "TSH-suppressive doses of levothyroxine are required to achieve preoperative native serum triiodothyronine levels in patients who have undergone total thyroidectomy." European Journal of Endocrinology 167.3 (2012): 373-378.
- Hoang, Thanh D., et al. "Desiccated thyroid extract compared with levothyroxine in the treatment of hypothyroidism: a randomized, double-blind, crossover study." The Journal of Clinical Endocrinology & Metabolism 98.5 (2013): 1982-1990.
- Thyroid hormone replacement: an iatrogenic problem. Int J Clin Pract. 2010 Jun;64(7):991-4. Dr O'Reilly DS. Department of Clinical Biochemistry, Royal Infirmary, Glasgow, UK.
- Alevizaki, Maria, et al. "TSH may not be a good marker for adequate thyroid hormone replacement therapy." Wiener klinische Wochenschrift 117.18 (2005): 636-640.

HPA and TSH



- **TSH Unreliable in Hypothalamic Dysfunction, Chronic Fatigue, Fibromyalgia Pts.**
- Teitelbaum, Jacob. "Effective treatment of chronic fatigue syndrome." *Integrative Medicine* 4.4 (2005): 23-29.
- Holtorf, Kent. "Diagnosis and treatment of hypothalamic-pituitary-adrenal (HPA) axis dysfunction in patients with chronic fatigue syndrome (CFS) and fibromyalgia (FM)." *Journal of Chronic Fatigue Syndrome* 14.3 (2007): 59-88.

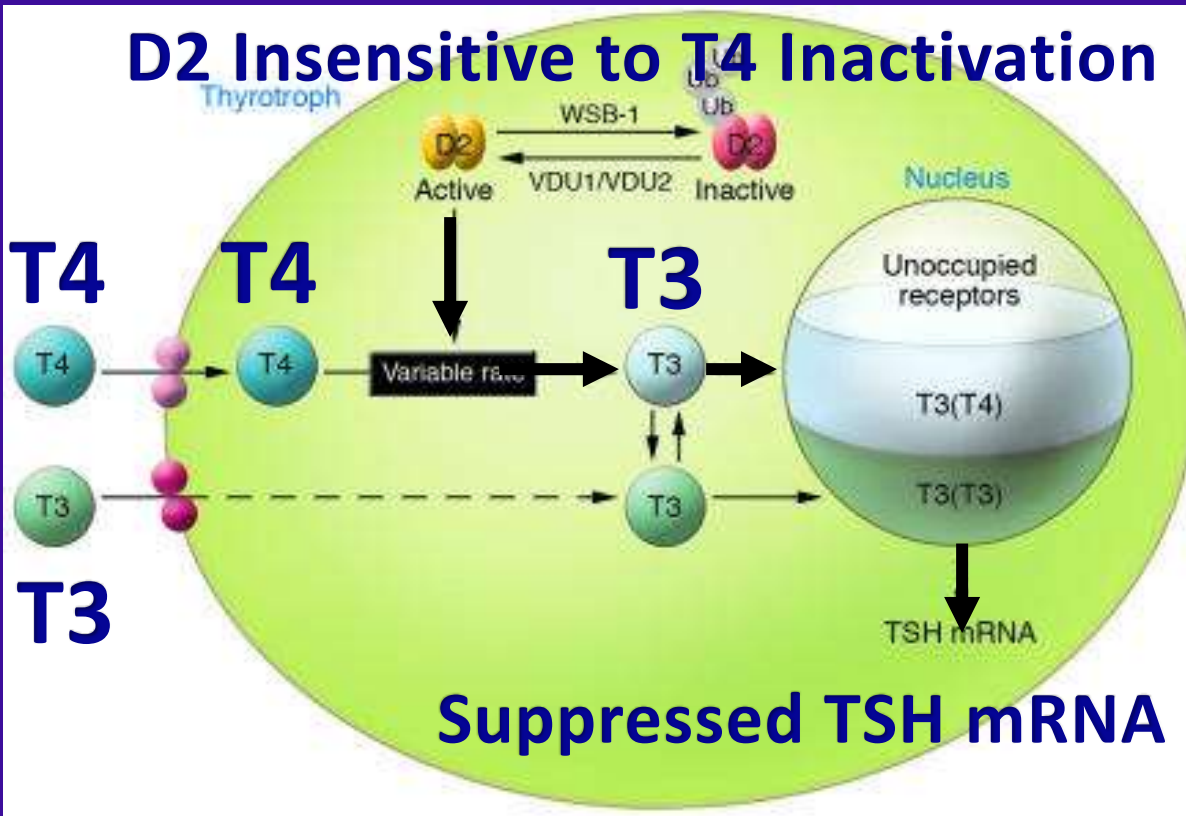
T4-Monotherapy Explained

- T4-Monotherapy Results in:
- Suppressed Pituitary Production of TSH- Hypothalamus and Pit. Relatively Insensitive to D2 Inactivation by T4.
- Peripheral Hypothyroidism from Decreased Peripheral Conversion of T4 to T3.
- D2 is Inactivated by T4 in Peripheral Tissues

De Castro, Joao Pedro Werneck, et al. "Differences in hypothalamic type 2 deiodinase ubiquitination explain localized sensitivity to thyroxine." *The Journal of clinical investigation* 125.2 (2015): 769.

Pituitary D2 -Deiodinase and TSH

D2 Insensitive to T4 Inactivation



Thyrotroph –Pituitary cell
T4 inactivates D2 in peripheral tissues
Thyrotroph less sensitive to T4 inactivation of D2
D2 is a selenoprotein

- De Castro, Joao Pedro Werneck, et al.
"Differences in hypothalamic type 2 deiodinase ubiquitination explain localized sensitivity to thyroxine." *The Journal of clinical investigation* 125.2 (2015): 769.
- Bianco, Antonio C., and Brian W. Kim.
"Deiodinases: implications of the local control of thyroid hormone action." *Journal of Clinical Investigation* 116.10 (2006): 2571.

Hypothalamic D2 Less Sensitive to T4 Inactivation

- **In most tissues, exposure to T4 inactivates D2 Deiodinase And Decreases conversion of T4 to T3 and peripheral T3 production.**
- Similar in Brain where the elevated serum T4/T3 ratio results in Hypothyroid Brain Cells .
- **BUT NOT IN the Hypothalamus**
- **Hypothalamic D2 is Less Susceptible to T4-induced inactivation and is so effective in this tissue that T4-induced D2 inactivation is insignificant.**
- **(This Suppresses TSH)** whereas T3 production via D2 is easily inhibited in the periphery. **(Creating Hypothyroid State)**
- This explains the discrepancy between normalization of TSH secretion and (Reduced) peripheral T3 production observed in L-T4–treated Tx rats.

De Castro, Joao Pedro Werneck, et al. "Differences in hypothalamic type 2 deiodinase ubiquitination explain localized sensitivity to thyroxine." *The Journal of clinical investigation* 125.2 (2015): 769.

Both T3 and T4 Needed

- ‘in contrast to other D2-expressing tissues, the hypothalamus is wired to have increased sensitivity to T4’
- “only constant delivery of **L-T4 and L-T3** fully normalizes T3-dependent metabolic markers and gene expression profiles in Thyroidectomized rats.”

- de Castro, Joao Pedro Werneck, et al. J clin invest 2015, “Differences in hypothalamic type 2 deiodinase ubiquitination explain localized sensitivity to thyroxine.”

T4-Only Monotherapy ?

T4-only Levothyroxine cannot guarantee normal thyroid function in all patients, even with a TSH in the “normal range”.

Quote: “More than 20% of these patients, despite normal TSH levels, do not maintain FT3 or FT4 values in the reference range, reflecting the **inadequacy of peripheral deiodination to compensate for the absent T3 secretion.**”

Gullo, Damiano et al. “Levothyroxine Monotherapy Cannot Guarantee Euthyroidism in All Athyreotic Patients.” Ed. Marian Ludgate. PLoS ONE 6.8 (2011): e22552. PMC. Web. 23 Dec. 2014.

T4-Only-Levothyroxine Monotherapy?

- 469 LT4 Only -treated pts. Were compared to controls
 - Levo treated more likely to have :
 - 15–20% lower serum T3:T4 ratios
 - Higher BMI(Weight)
 - Taking Beta-Blockers, Statins, and SSRI Anti-depressants
 - Cognitive Impairment
-
- Peterson, Sarah J., Elizabeth A. McAninch, and Antonio C. Bianco. "Is a Normal TSH Synonymous With "Euthyroidism" in Levothyroxine Monotherapy?." The Journal of Clinical Endocrinology & Metabolism 101.12 (2016): 4964-4973.

Hypothyroidism Symptoms Linger Despite Normal Blood Tests

- Despite normal TSH tests, these patients still have many nagging symptoms of hypothyroidism. “Patients complain of being depressed, slow and having a foggy mind,” said Rush’s Antonio C. Bianco, MD, PhD, an
- immediate past president of the American Thyroid Association that is professor of medicine at Rush
- “They have difficulty losing weight. They complain of feeling sluggish and have less energy.
- Yet we doctors keep telling them, ‘I’m giving you the right amount of medication and your TSH is normal. You should feel fine.’”
- Antonio Bianco MD 12-Oct-2016

T4 Only Monotherapy ?

- Hypothyroidism Symptoms Linger Despite Medication and Normal Blood Tests
- **“Better medications (than Levo) are needed to treat hypothyroidism, Dr Antonio Bianco believes.”**
- **“Patients who continue to have symptoms on Levothyroxine monotherapy might try a pill that contains both T3 and T4. “**
- Antonio Bianco MD 12-Oct-2016



TSH Suppression May be Needed for Adequate Treatment

135 consecutive patients with papillary thyroid carcinoma, who underwent total thyroidectomy.

“Our study indicated that a

moderately TSH-suppressive dose of L-T4 is required to achieve the preoperative native serum T3 levels in postoperative L-T4 therapy”

Ito, Mitsuru, et al. “TSH-suppressive doses of levothyroxine are required to achieve preoperative native serum triiodothyronine levels in patients who have undergone total thyroidectomy.”

European Journal of Endocrinology 167.3 (2012): 373-378.

Center for Excellence in Thyroid Care, Kuma Hospital, 8-2-35, Shimoyamate-Dori, Chuo-Ku, Kobe-City, Hyogo

TSH Suppression Benefits and Adverse Effects

- Long-Term Study (7 years) in Cancer Pts. On T4 Therapy with TSH Suppression . Conclusion:
- **No Evidence of Lower Bone Mineral Density**
- (Reverter, J. L., et al. "Lack of deleterious effect on bone mineral density of long-term thyroxine suppressive therapy for differentiated thyroid carcinoma." Endocrine-related cancer 12.4 (2005): 973-981.
- Chen, Cheng-Hsiung, et al. "Bone mineral density in women receiving thyroxine suppressive therapy for differentiated thyroid carcinoma." Journal of the Formosan Medical Association= Taiwan yi zhi 103.6 (2004): 442-447.



TSH Suppression – Lack of Harm

Thyroid Nodule Pts.

- 51 patients with thyroid nodule.
- TSH suppressed below 0.3 to shrink nodule
- Conclusion:

“NO significant decrease in BMD after 1 yr of treatment with suppressive doses of T4.”

Zelmanovitz, Flávio, Sandra Genro, and Jorge L. Gross. "Suppressive therapy with levothyroxine for solitary thyroid nodules: a double-blind controlled clinical study and cumulative meta-analyses." *The Journal of Clinical Endocrinology & Metabolism* 83.11 (1998): 3881-3885.



TSH Suppression – Lack of Harm

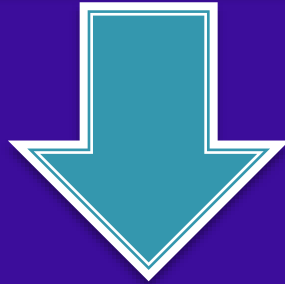
Post-Menopausal Women

- Bioidentical Hormone Program, Vit K2 (MK-7), Vit D3, Calcium, Magnesium, etc.
- Bone Density Improves Even With Suppressed TSH .
- Schneider, Diane L., Elizabeth L. Barrett-Connor, and Deborah J. Morton. "Thyroid hormone use and bone mineral density in elderly women: effects of estrogen." *Jama* 271.16 (1994): 1245-1249. Women taking both thyroid hormone and estrogen had BMD levels comparable with those observed in women taking only estrogen.



Deception vs. Reality

- Deception- TSH Suppression Causes Osteoporosis



- Reality – This is true for Graves, but not for Routine NDT Treatment.



Errors – Hashimotos' Auto-Immune Thyroid Disease

- 1) Ignoring Selenium – Reduces antibody levels. (Drutel, 2013)
- 2) Ignoring TSH Suppression with Thyroxine or NDT. (Rink 1999)(Padberg, 2001)
- 3) Ignoring Iodine -- start low dose 225 mcg - Important for child bearing ages to prevent low IQ in baby.
- 4) Iodine will Suppress Thyroid Function. (Dayan, 1996)
- 5) Ignoring Gluten Free Diet (Hadithi 2007)
- 6) Ignoring LDN - Low Dose Naltrexone
- 7) Dealing with Hashi-toxicosis Fluctuating thyroid function (Alzahrani 2005)

References - Hashimotos

- Drutel, Anne, Françoise Archambeaud, and Philippe Caron. "Selenium and the thyroid gland: more good news for clinicians." *Clinical endocrinology* 78.2 (2013): 155-164.
- Rink, T., et al. "Effects of iodine and thyroid hormones in inducing and treating Hashimoto's thyroiditis." *Nuklearmedizin* 38.5 (1999): 144-149.
- Padberg, S., et al. "One-year prophylactic treatment of euthyroid Hashimoto's thyroiditis patients with levothyroxine: is there a benefit?." *Thyroid* 11.3 (2001): 249-255.
- Dayan, Colin M., and Gilbert H. Daniels. "Chronic autoimmune thyroiditis." *New England journal of medicine* 335.2 (1996): 99-107
- Hadithi, Muhammed, et al. "Coeliac disease in Dutch patients with Hashimoto's thyroiditis and vice versa." *World journal of gastroenterology* 13.11 (2007): 1715.
- Alzahrani AS, Aldasouqi S, Abdel Salam S, Sultan A (2005) Autoimmune Thyroid Disease with Fluctuating Thyroid Function. *PLoS Med* 2(5): e89.
- Korzeniowska, Katarzyna, et al. "L-thyroxine stabilizes autoimmune inflammatory process in euthyroid nongoitrous children with Hashimoto's thyroiditis and type 1 diabetes mellitus." *Journal of clinical research in pediatric endocrinology* 5.4 (2013): 240.
- Meloni, A., et al. "Prevalence of autoimmune thyroiditis in children with celiac disease and effect of gluten withdrawal." *The Journal of pediatrics* 155.1 (2009): 51.
- AKSOY, Duygu Yazgan, et al. "Effects of prophylactic thyroid hormone replacement in euthyroid Hashimoto's thyroiditis." *Endocrine journal* 52.3 (2005): 337-343.
- Krysiak, Robert, and Boguslaw Okopien. "The effect of levothyroxine and selenomethionine on lymphocyte and monocyte cytokine release in women with Hashimoto's thyroiditis." *The Journal of Clinical Endocrinology & Metabolism* 96.7 (2011): 2206-2215.

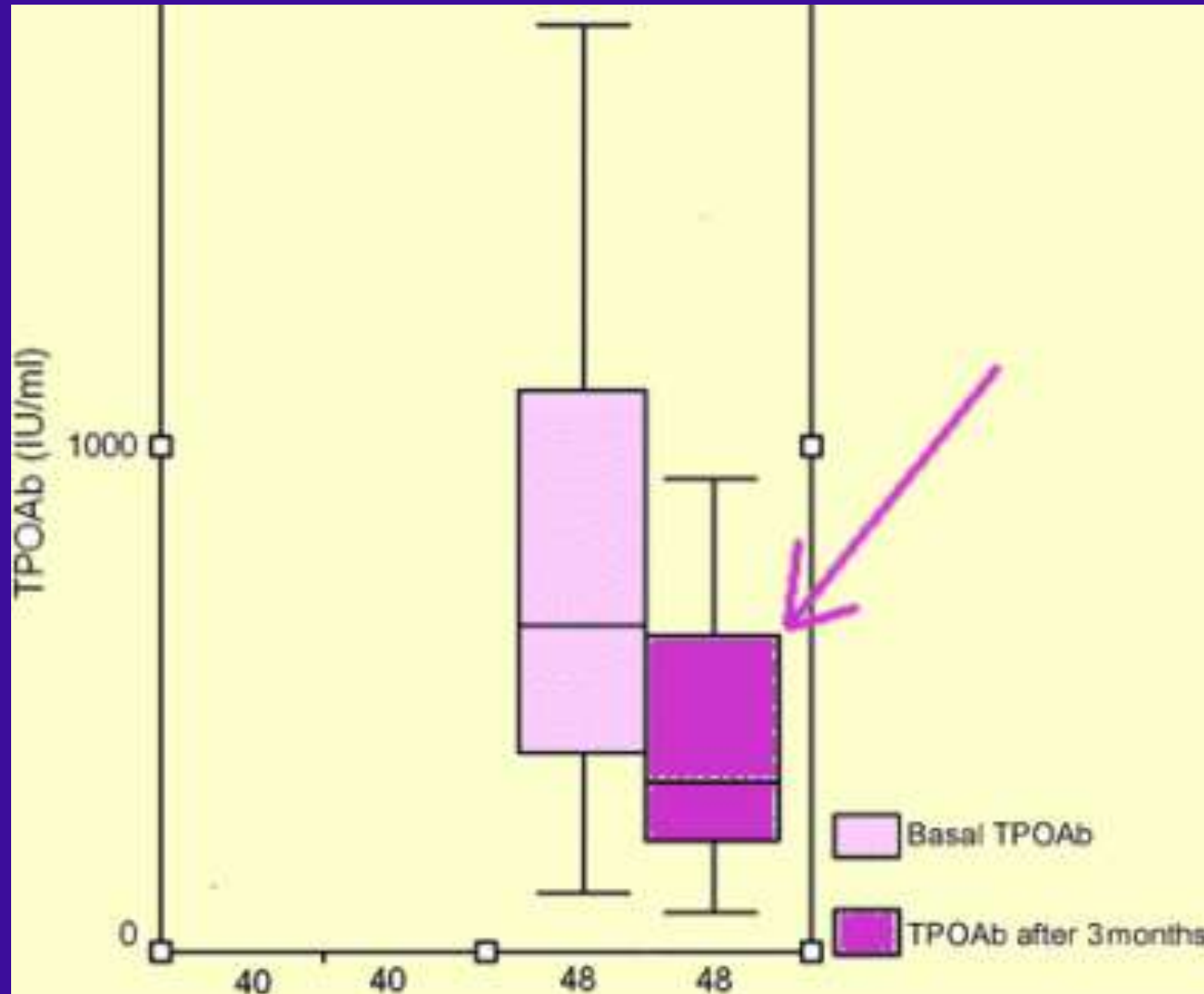
Selenium and Thyroxine in Hashimoto's

- “Levothyroxine and Selenomethionine Exhibit Similar Anti-Inflammatory Effects in Euthyroid Females with Hashimoto's Thyroiditis.
- This Correlates with Reduction in TPO Ab titers and Clinical Benefits in Hashimoto's, particularly in subjects receiving both agents.”
- Krysiak, R., and B. Okopien. "The effect of levothyroxine and selenomethionine on lymphocyte and monocyte cytokine release in women with Hashimoto's thyroiditis." The Journal of clinical endocrinology and metabolism 96.7 (2011): 2206.

Errors in Thyroid Endocrinology Hashimotos'

- Ignoring Low Dose Naltrexone (LDN)
- Ignoring Vitamin D3
- Ignoring Gluten Free Diet
- Ignoring Selenium
- Ignoring Thyroxine/NDT in Many Pts.

Selenium in Hashimotos'



- **Reduction in TPO Ab after selenium 200 mcg /d. 9mo.**
- **Turker, Omer, et al. "Selenium treatment in autoimmune thyroiditis: 9-month follow-up with variable doses." Journal of endocrinology 190.1 (2006): 151-156.**

Iodine for Hashimotos'

- Hashimotos pts are very sensitive to Iodine, which will suppress thyroid function leading to elevation of TSH.
- Dayan, Colin M., and Gilbert H. Daniels. "Chronic autoimmune thyroiditis." New England journal of medicine 335.2 (1996): 99-107.
- Firstly, start Selenium supplementation (200-400 mcg/d) for 2-4 weeks.
- After which, low dose (225mcg/d) iodine supplementation may be started.
- Pregnancy-Developing Fetus Needs Iodine.
- Breast Cancer Prevention- iodine.

Iodine Suppressive Effect

- “Iodine reduces thyroid secretion in both subjects with and without thyroid antibodies,
- Iodine acts by inhibiting biosynthesis and release of thyroid hormone rather than by augmenting thyroid autoimmunity .
- Euthyroid patients with (subclinical) chronic autoimmune thyroiditis are more susceptible to the anti-thyroid effects of iodine. “ Quote From:
- Dayan, Colin M., and Gilbert H. Daniels. "Chronic autoimmune thyroiditis." **New England J Med** 335.2 (1996): 99-107.

Hashi-Toxicosis

Transient Episodes of Hyperthyroidism

Sporadic bouts of worsening inflammation
Damaged thyrocytes release thyroid hormone
into circulation.
Usually self-limited and subsides after a week or so,
Pt. resumes hypothyroid state.
Roller-Coaster Effect
Multiple Doctor Merri-Go Round

Hashi-Toxicosis

Hold Thyroid Meds - NDT SAFER HERE !!

Beta- Blocker for Tachycardia

Selenium, D3 , Gluten Free Diet, Wait

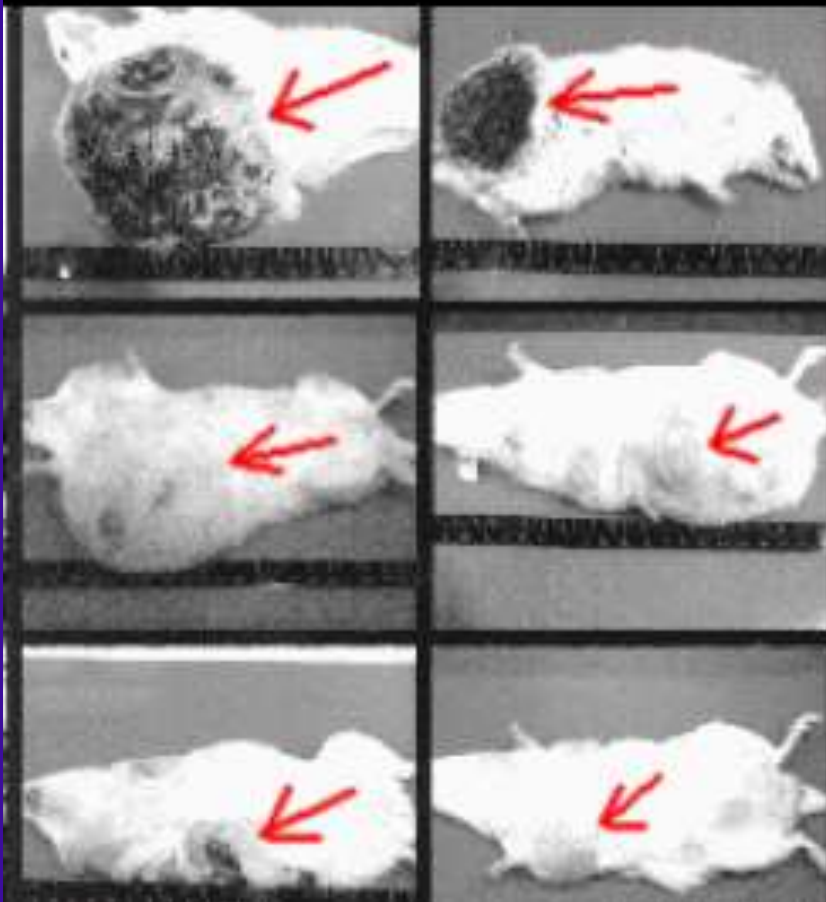
- May occur early during treatment IF:
- Aggravated by Selenium Deficiency.
- Aggravated by High TSH.
- Check Selenium Level Routinely !
- Aggravated by Wheat Gluten intake in Sensitive individuals which Triggers Immune System.
- Unlikely if pts' TSH suppressed with thyroid meds.

Iodine as Breast Cancer Preventive

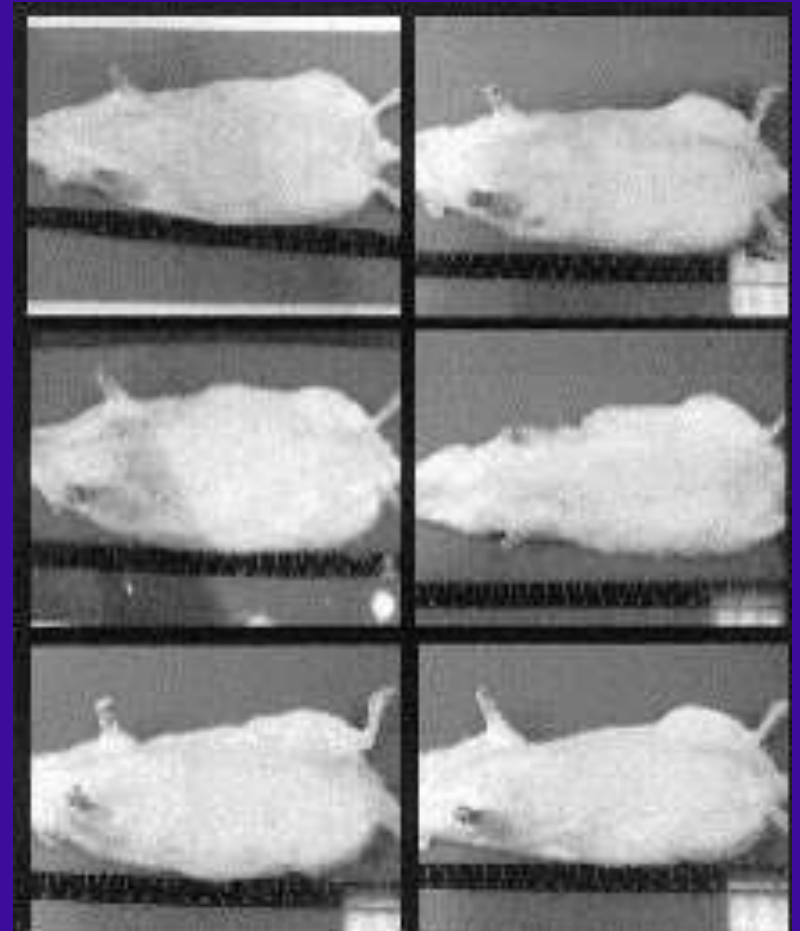
- **Safety-** FDA recommends 130 mg of Iodine for adults in case of Radiation Emergency to protect the population from thyroid cancer. (Guidance on Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies, U.S. Department of Health and Human Services, Food and Drug Administration, Center for Drug Evaluation and Research (CDER), December 2001)
- **Iodine Deficiency Causes Breast Cancer** (Dietary Iodine Deficiency as a Tumor Promoter and Carcinogen in Male F344/NCr Rats Masato Ohshima and Jerrold M. Ward. Cancer Research 46, 877-883, February 1, 1986)
- **Iodine Prevents Breast Cancer in Animal Model** (Jpn. J. Cancer Res. 92, 483–487, May 2001 Seaweed Prevents Breast Cancer? Hiroomi Funahashi et al.)
- **Iodine Causes Apoptosis of Breast Cancer Cells** (Shrivastava, Ashutosh, et al. "Molecular iodine induces caspase-independent apoptosis in human breast carcinoma cells involving the mitochondria-mediated pathway." Journal of Biological Chemistry 281.28 (2006): 19762-19771.

Iodine Prevents Breast Cancer in DMBA Model

Control Red Arrow
Breast Cancer



IodineTreated

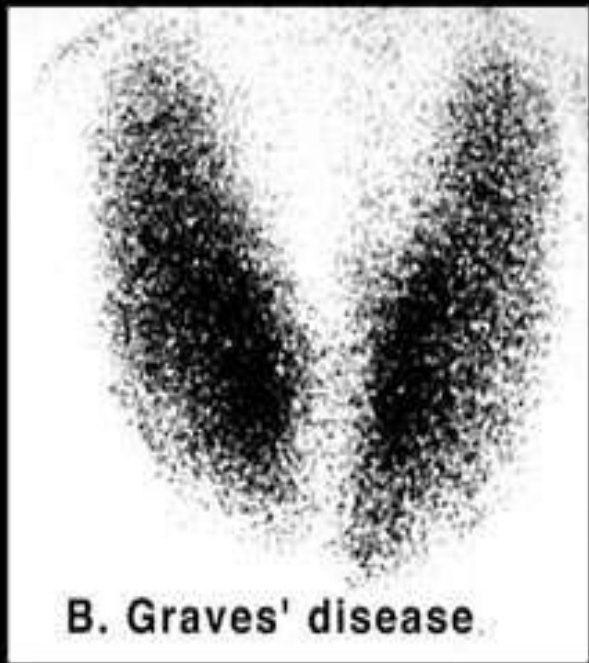


Errors

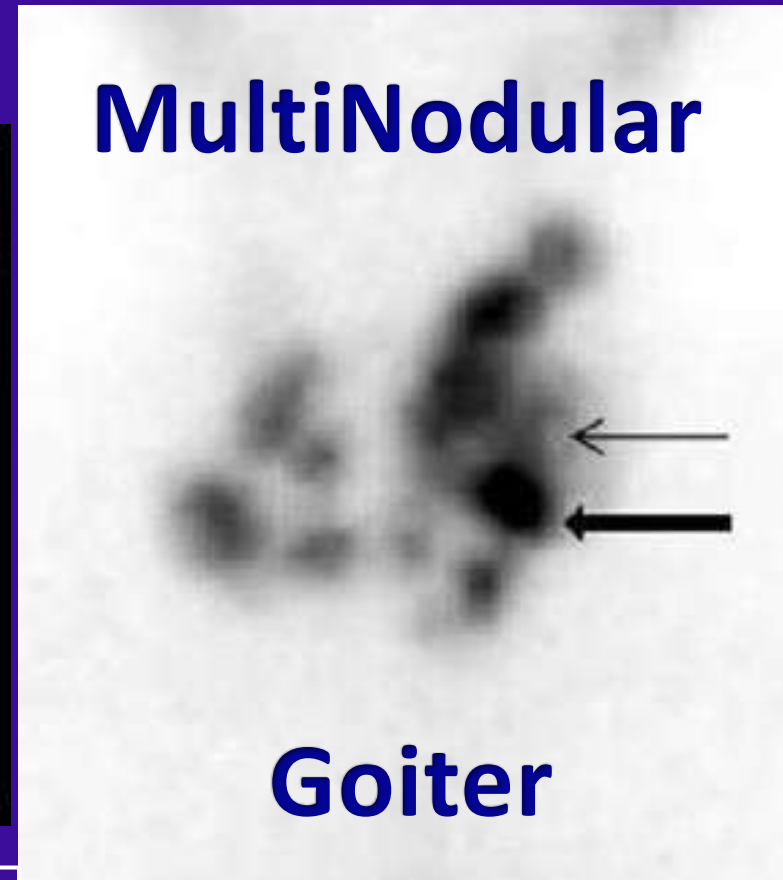
Graves' Hyper-Thyroidism

- Relying On: Methimazole, Radioactive Iodine, Surgery as Only Treatment - Not the Only Options.
- Iodine Treats Graves. (Wartofsky, JCI 1970)
- Lithium Carbonate Treats Hyperthyroidism (Boehm, ACTA Endo 1980) (Temple, JCI 1972)
- Iodine Contra-Indicated Toxic Nodular Goiter or Autonomous Nodule- TSI Receptor Mutation- Thyrotoxicosis (Redisch W, Perloff WH. "Medical treatment of hyperthyroidism." Endo 1940)

Graves vs. Multi-Nodular Goiter



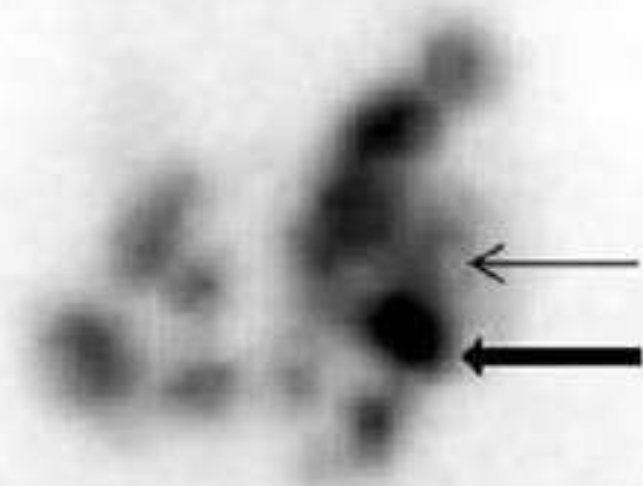
TSI, TBII Abs Elevated in Graves
Iodine Suppresses Thyroid
Function



TSH Receptor Mutation- Iodine
Causes Thyrotoxicosis

Toxic Multi-Nodular Goiter and Autonomous Nodule

MultiNodular



Goiter

- Iodine Contra-Indicated
- Causes Thyrotoxicosis and Thyroid Storm.
- Must Differentiate Graves' from Autonomous Nodule, and Toxic-Nodular Goiter
- Use TSI and TB-II, Imaging w/US and I-131.

Errors in Thyroid Endo- Case Report

- AACE 2017 Annual Meeting, Sarah Fishman, MD, PhD, of Lenox Hill Hospital, New York case report:
- Patient developed thyroid disease when taking an unregulated dietary supplement containing excessive iodine (2,000 mcg/day).
- 39-year old male patient negative for TSH Receptor and Thyroglobulin Abs, positive TPO Abs (56 IU/mL).
- Thyroid US "multiple nodules, a left-sided sub-centimeter nodule, and two nodules in the right lobe, the largest of which was 1.3cm"
- Suppressed TSH <0.03 IU/mL), FT4 2.88ng/dL, T3 level 470ng/dL (Thyro-toxic)

Error in Case Report:

- Conclusion:
- This Case Report is deceptive and misleading.
- The authors are so focused on Vilifying Iodine, they miss the correct diagnosis.
- Iodine did not cause the patient's underlying thyroid disease of toxic nodular goiter with autonomous nodule.
- Yes, Iodine did cause the thyrotoxicosis episode which resolved upon withdrawing the iodine.
- Iodine is contra-indicated in these rare cases, and generally safe for the remainder of the population.

Broda Barnes, MD (1976). Hypothyroidism: The Unsuspected

Low thyroid function—how
it may be affecting your body,
your emotions, your life.

Hypo- thyroidism: The Unsuspected Illness

by Broda O. Barnes, M. D.
and Lawrence Galton

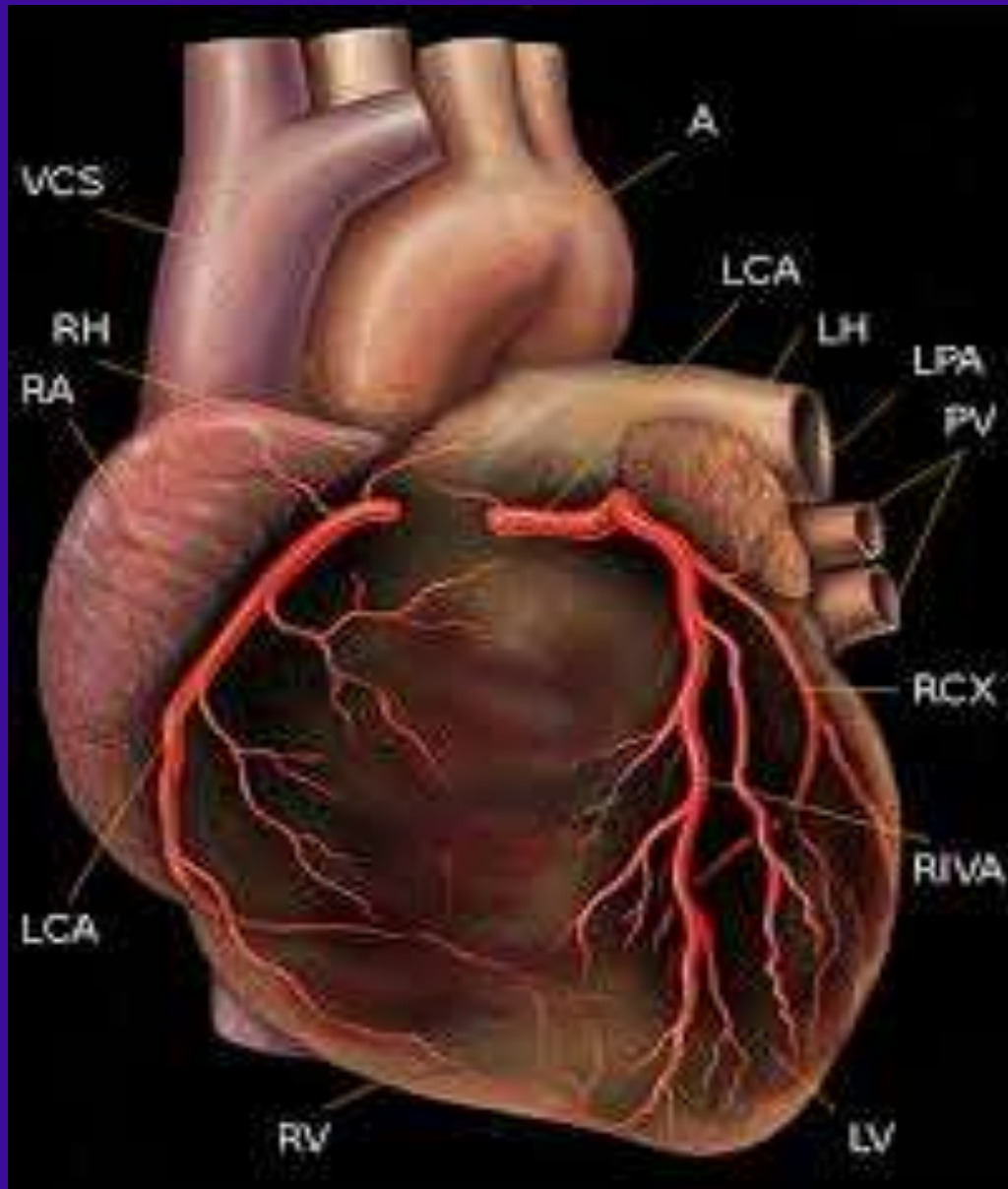


Errors in Thyroid Endocrinology Ignoring Cardiac and Immune Risks

- Hypothyroidism – Increases Risk of Coronary Artery Disease and Myocardial Infarction- Hunt Study- (Asvold Bjørn 2008)(Broda Barnes 1976)
- Hypothyroidism – Depresses Immune System, Increases Risk for Infection and Cancer
(Frick, 2009) (Schoenfeld, 1995) (Perrotta 2014)(Broda Barnes)



Thyroid and the Heart



HUNT Study

- TSH in 17,000 women, no thyroid or heart disease.
- All patients had “normal TSH” 0.5 to 3.5
- Lower TSH, Intermediate and Upper TSH levels
- Mortality from heart disease over an 8 years.

	TSH	Death from Heart Disease
Group 1	0.50-1.4	baseline risk
Group 2	1.5-2.4	40% higher than baseline
Group 3	2.5-3.5	70% higher than baseline

Åsvold, Bjørn O., et al. “Thyrotropin levels and risk of fatal coronary heart disease: the HUNT study.” Archives of internal medicine 168.8 (2008): 855-860.

Heart Disease Prevention

Sub-Clinical Hypothyroidism Defined as:

- Serum thyrotropin 5 -10 mIU/L
- Normal Free T3 (thyroxine) level.

(Razvi, Salman, et al. 2012.Arch Int Med) Levothyroxine treatment of subclinical hypothyroidism, fatal and nonfatal cardiovascular events, and mortality



Sub-Clinical Hypothyroidism

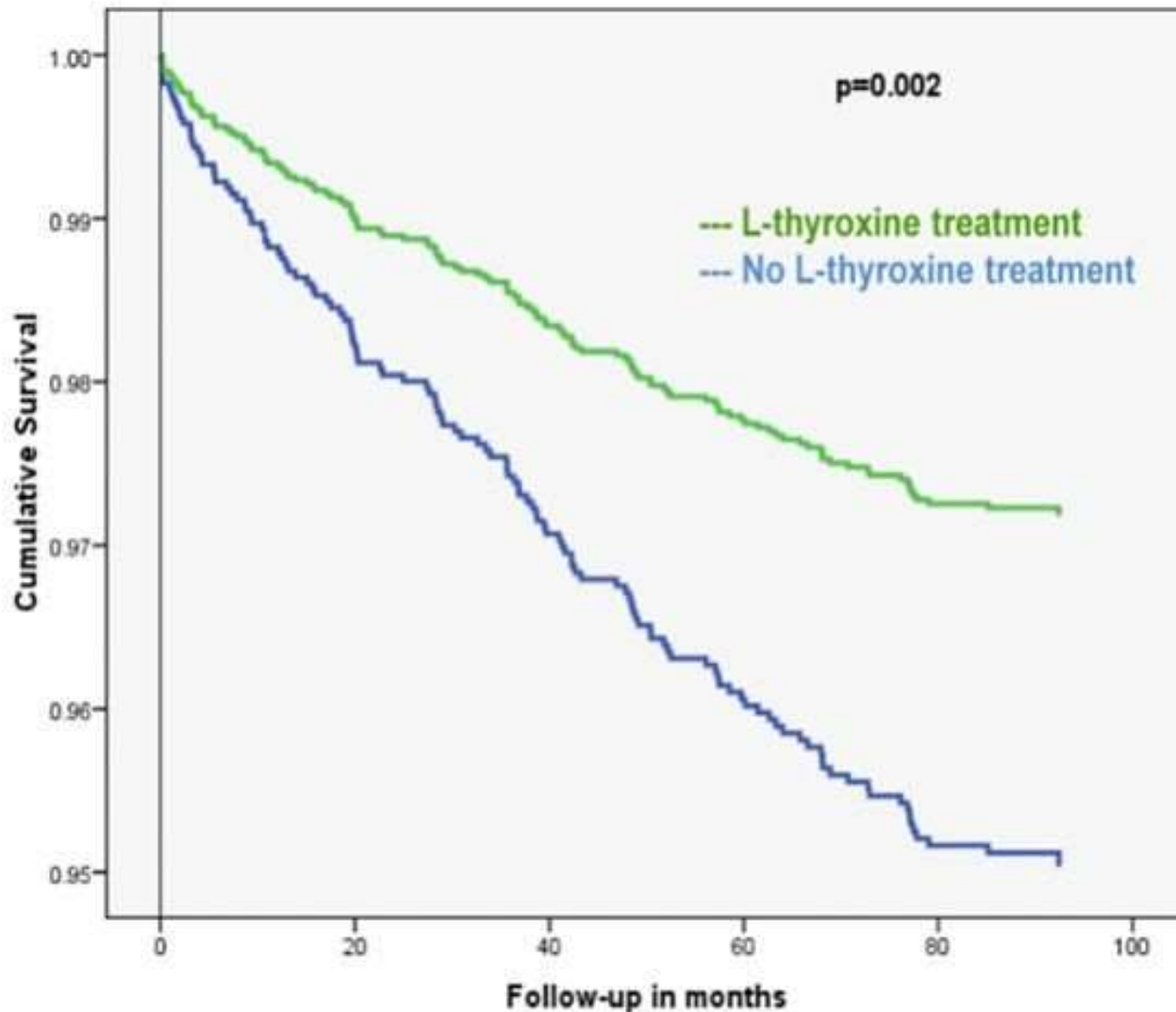
Heart Disease

- Treatment with Levothyroxine was associated with **Fewer** ischemic heart disease (IHD) events and **Reduced all-cause mortality** during an 8-year period of observation in 40 to 70-year-old individuals **with subclinical hypothyroidism.**

Razvi, Salman, et al. 2012. Arch Int Med



Heart Disease Prevention



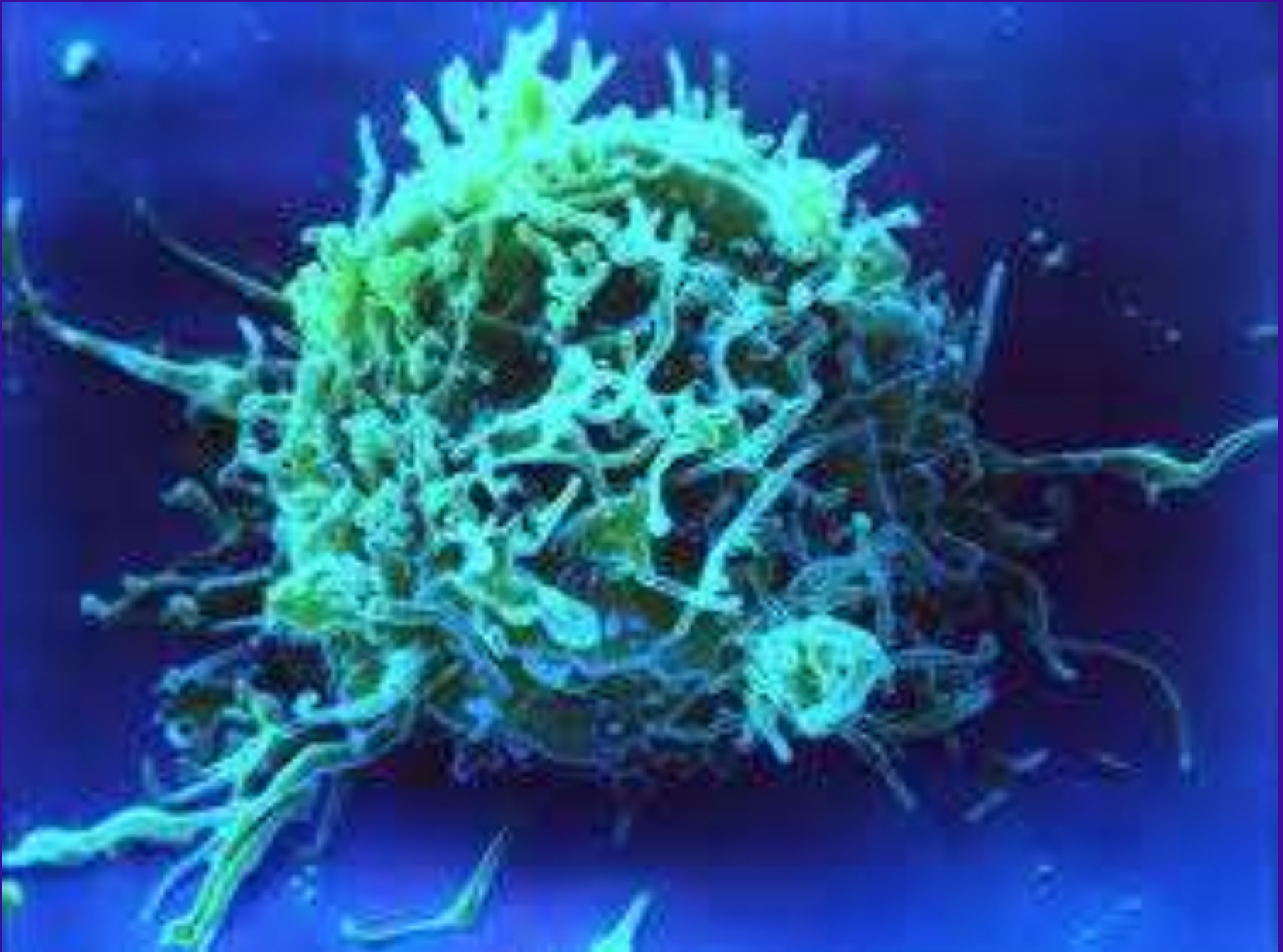
Survival in 40-70 yr old ptds. with subclinical hypothyroidism treated with thyroxine. Razvi, Salman, et al. 2012. Arch Int Med



References SCH and Heart Disease

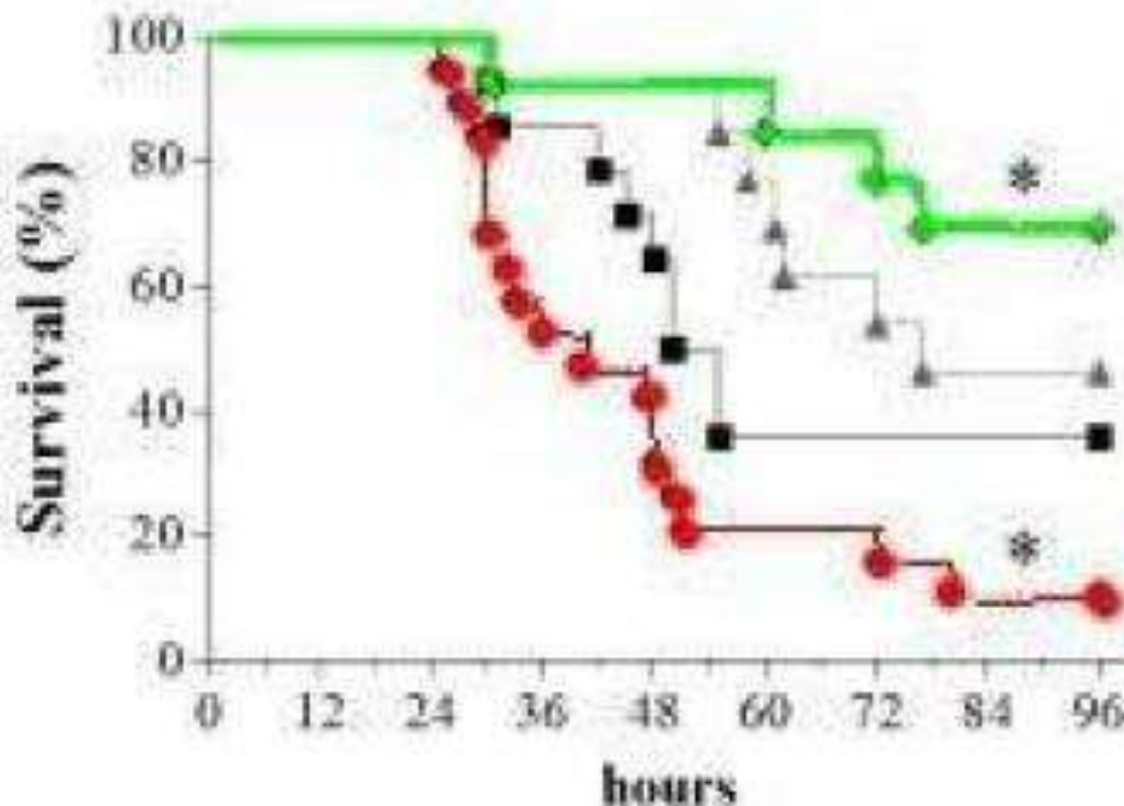
- Razvi, Salman, et al. "Levothyroxine treatment of subclinical hypothyroidism, fatal and nonfatal cardiovascular events, and mortality." *Archives of internal medicine* 172.10 (2012): 811-817.
- Kvetny, J., et al. "Subclinical hypothyroidism is associated with a low-grade inflammation, increased triglyceride levels and predicts cardiovascular disease in males below 50 years." *Clinical endocrinology* 61.2 (2004): 232.
- Hak, A. Elisabeth, et al. "Subclinical Hypothyroidism Is an Independent Risk Factor for Atherosclerosis and Myocardial Infarction in Elderly Women: The Rotterdam Study." *Ann Intern Med* 132 (2000): 270-278
- Imaizumi, Misa, et al. "Risk for ischemic heart disease and all-cause mortality in subclinical hypothyroidism." *The Journal of Clinical Endocrinology & Metabolism* 89.7 (2004): 3365-3370.
- Tseng, Fen-Yu, et al. "Subclinical hypothyroidism is associated with increased risk for all-cause and cardiovascular mortality in adults." *Journal of the American College of Cardiology* 60.8 (2012): 730-737.
- RAZVI, Salman, et al. "The Incidence of Ischemic Heart Disease and Mortality in People with Subclinical Hypothyroidism: Reanalysis of the Whickham Survey Cohort." *The Journal of clinical endocrinology and metabolism* 95.4 (2010): 1734-1740.
- Rodondi, Nicolas, et al. "Subclinical Hypothyroidism and the Risk of Coronary Heart Disease and Mortality." *JAMA: the journal of the American Medical Association* 304.12 (2010): 1365.

Thyroid and the Immune System



Thyroid Enhances Immune System

- euthyroid
- hypothyroid
- hypothyroid + T_3
- ▲ hypothyroid + AMIO + T_3



- Mouse Model Endotoxemia IP INJ LPS.

- **Green Line** 70% survival in Thyroxine treated mice.

- **Red Line** 10 % Survival in Hypothyroid Mice

- Perrotta, Am J Path (2014)



Thyroid Enhances Immune System



- T3 significantly protected mice against Endotoxemia induced by I.P. LPS (lipopolysaccharide) injection;

- Perrotta, Cristiana, et al. "The thyroid hormone triiodothyronine controls macrophage maturation and functions: protective role during inflammation." The American journal of pathology 184.1 (2014): 230-247.



Thyroid Immune System Cancer

experimental hypothyroidism leads to a general depression of the immune system
thyroid hormones are implicated in the impairment of T-cell– mediated immunity and the enhancement of tumor progression induced by chronic restraint stress in a murine model of lymphoma .

potential therapeutic action of thyroxine in the adjuvant treatment of stress-related disorders such as immunosuppression and cancer Frick,2009.



Errors in Thyroid Endocrinology : PREGNANCY

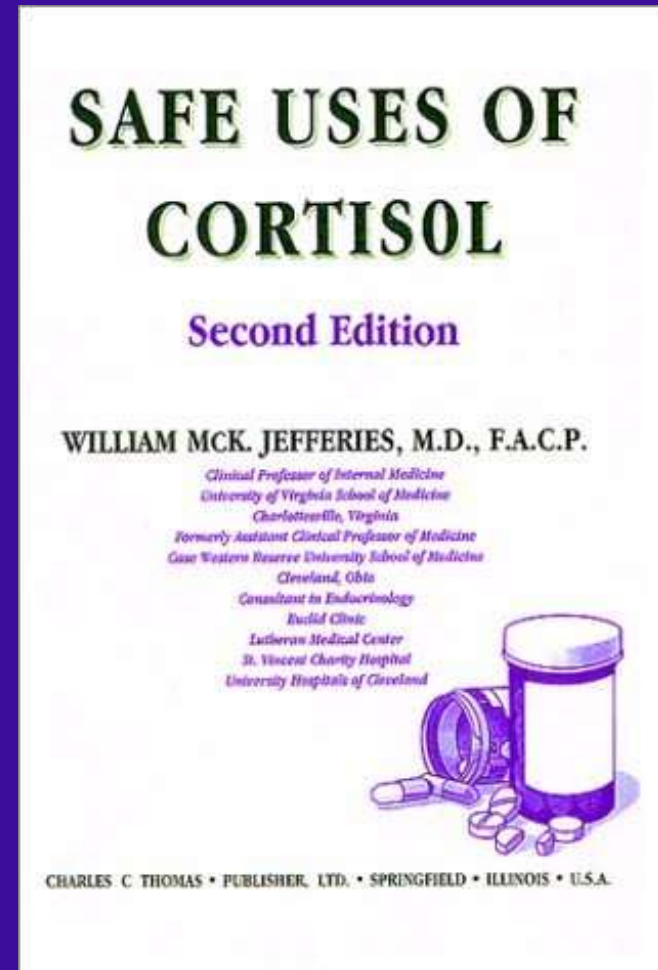
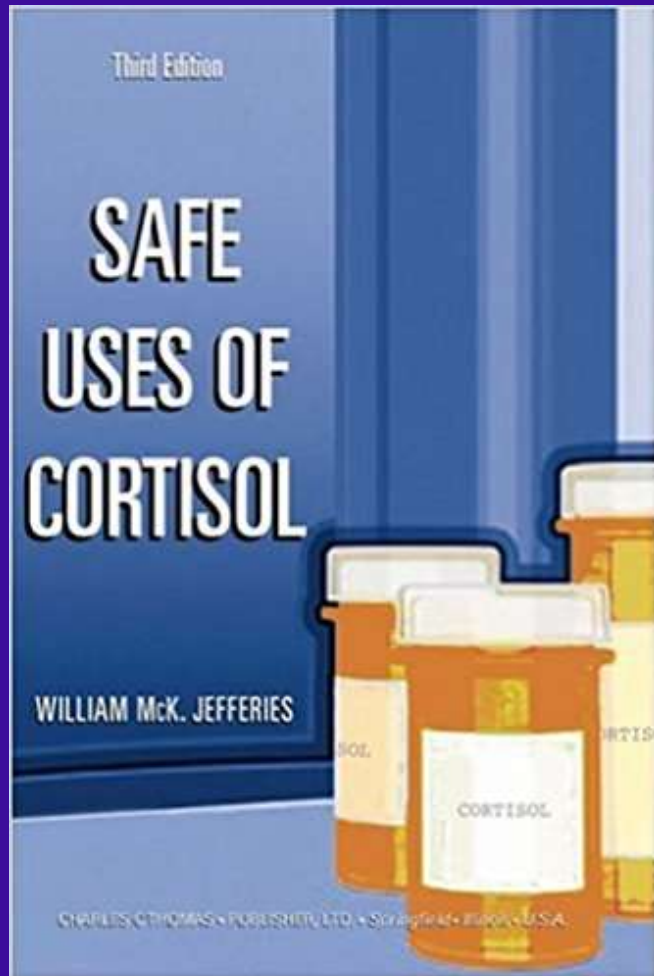


- **Ignoring:** Maternal Anti-Thyroid Antibodies and Subclinical Hypothyroidism Assoc w/ Increased Miscarriage, Prevented with Thyroxine. (Negro, J Clin Endo Metab 2006)
- **Ignoring :** Maternal Iodine Deficiency Associated with Reduced Educational Outcome in Offspring. (Hynes, J Clin Endo Metab 2013)

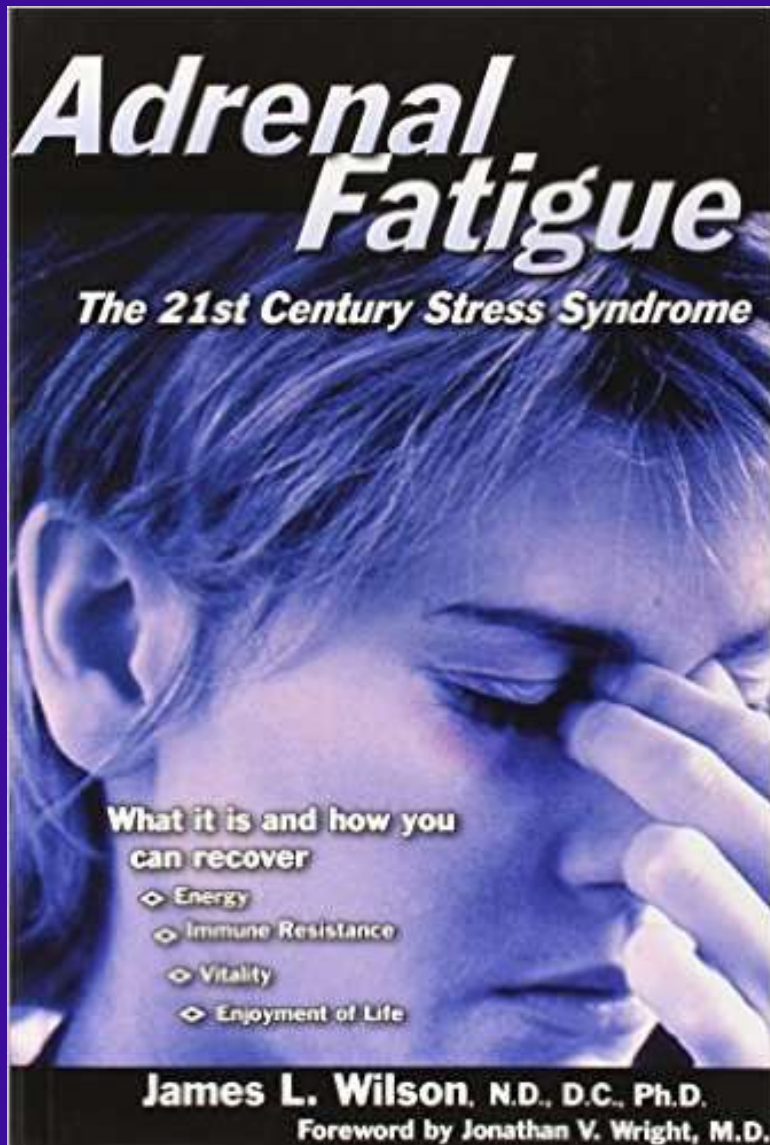


William M. Jefferies MD

Safe Uses of Cortisol



Adrenal Fatigue by James L Wilson



Adrenal Fatigue: The
21st Century Stress
Syndrome Jan 1, 2001
by James L. Wilson



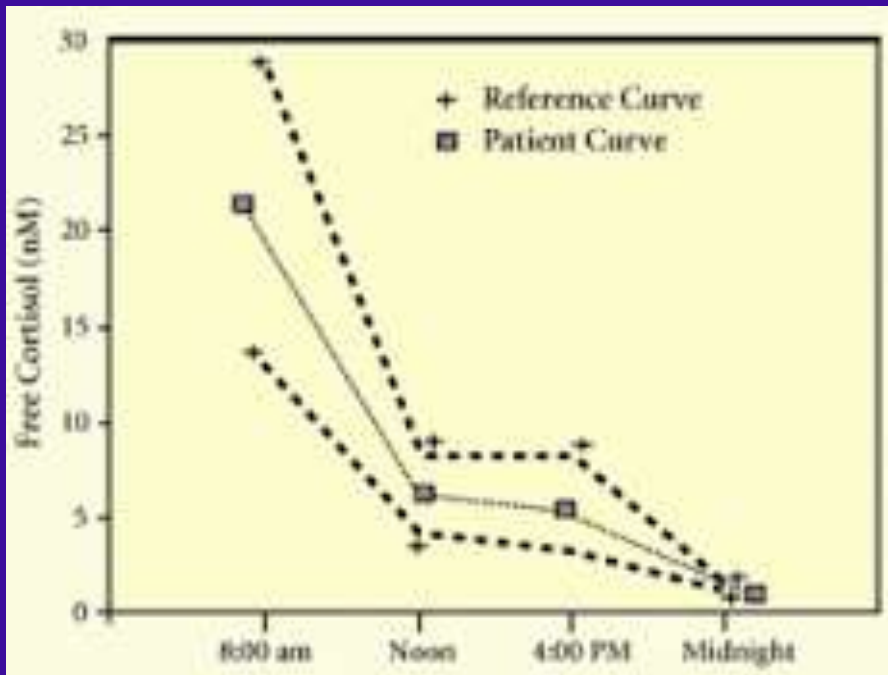
Errors in Thyroid Endocrinology

Ignoring Adrenal Fatigue

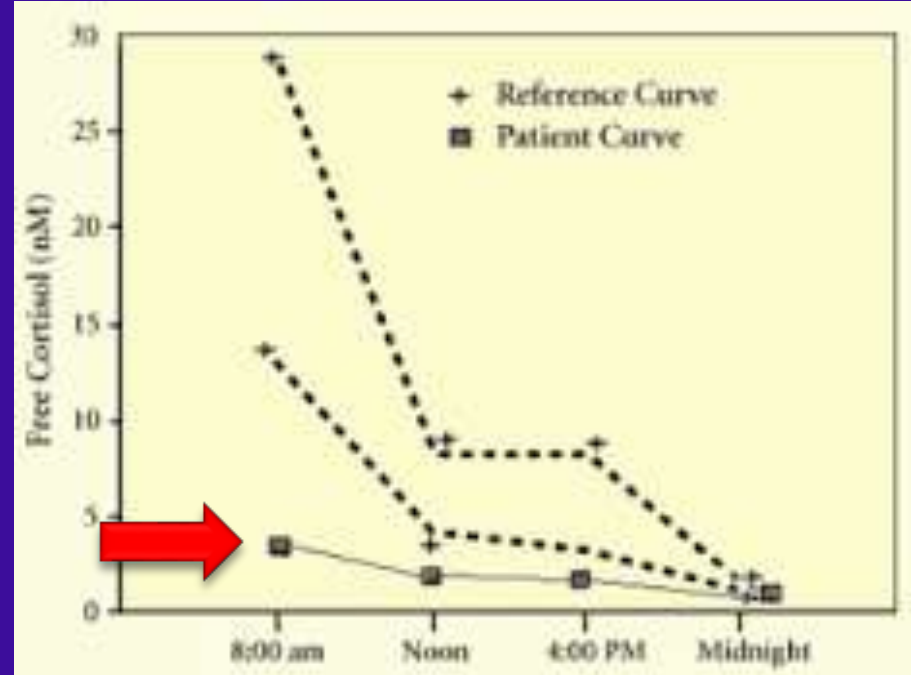
- Hypothyroid, Yet Cannot Tolerate Thyroid
- Testing-
Low AM Serum Cortisol ,
Low AM Salivary Cortisol (Laudat, 1988)
- Adrenal Support with HC, Vit C, B5, Adaptogens.
(Cleare, 2001)
- Low dose HC Hydrocortisone (CORTEF)



Salivary Cortisol Adrenal Fatigue



Normal

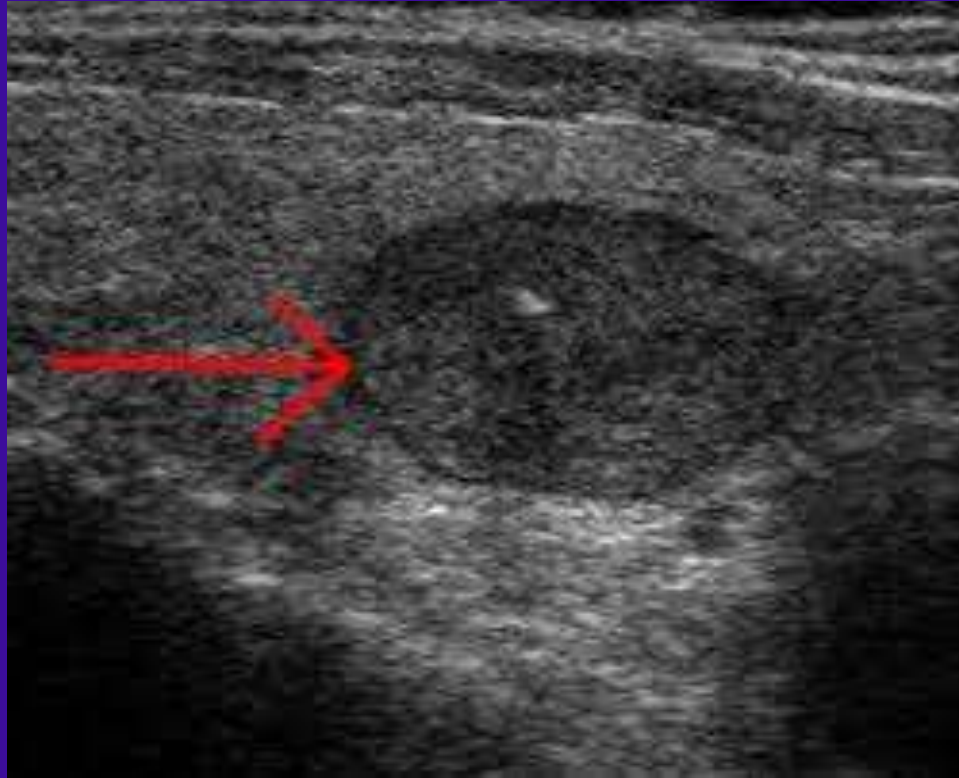


Flat Line

Nater, Urs M., et al. "Attenuated morning salivary cortisol concentrations in a population-based study of persons with chronic fatigue syndrome and well controls." *The Journal of Clinical Endocrinology & Metabolism* 93.3 (2008): 703-709.



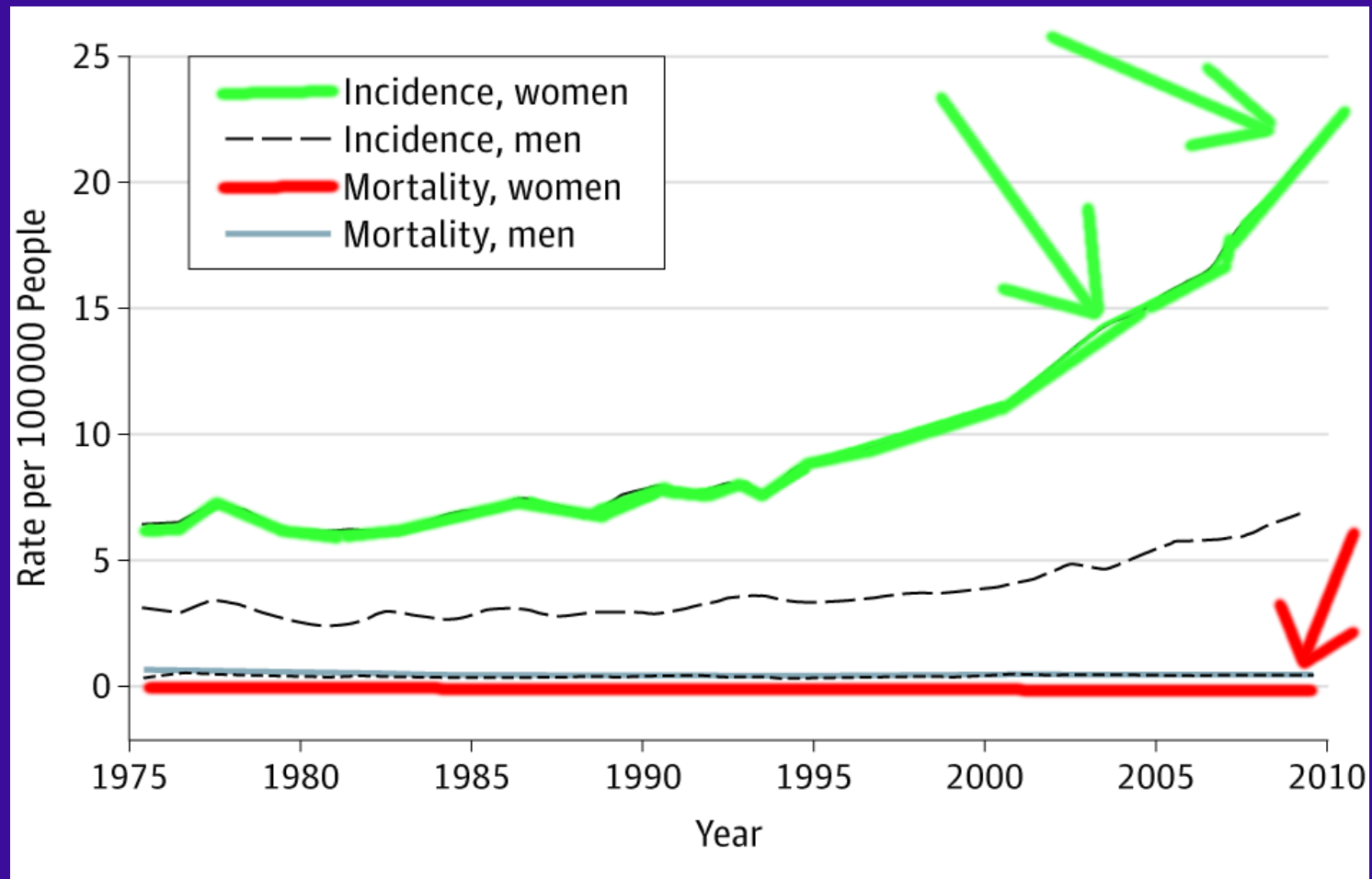
The Thyroid Nodule Epidemic



Dr Cronan: "Thyroid Nodules:
Is It Time to Turn Off the US Machines?"



Thyroid Cancer Incidence and Mortality



● (Davies and Welch, 2014)



Thyroid Cancer Epidemic

“Not an Epidemic of Disease but
Rather an Epidemic of Diagnosis.”



Errors in Thyroid Endocrinology

The Thyroid Nodule Epidemic

- Dr Cronan Radiology 2008 :
Turn Off the Ultrasound Machines – STOP
Screening Normal Healthy Women
- Young women with **clinically insignificant**
small thyroid cancers are being treated with
thyroidectomy and I-131 radio-ablation.
- Test and Supplement with Iodine.



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Thank You – Any Questions?



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