THYROID
PARATHYROID

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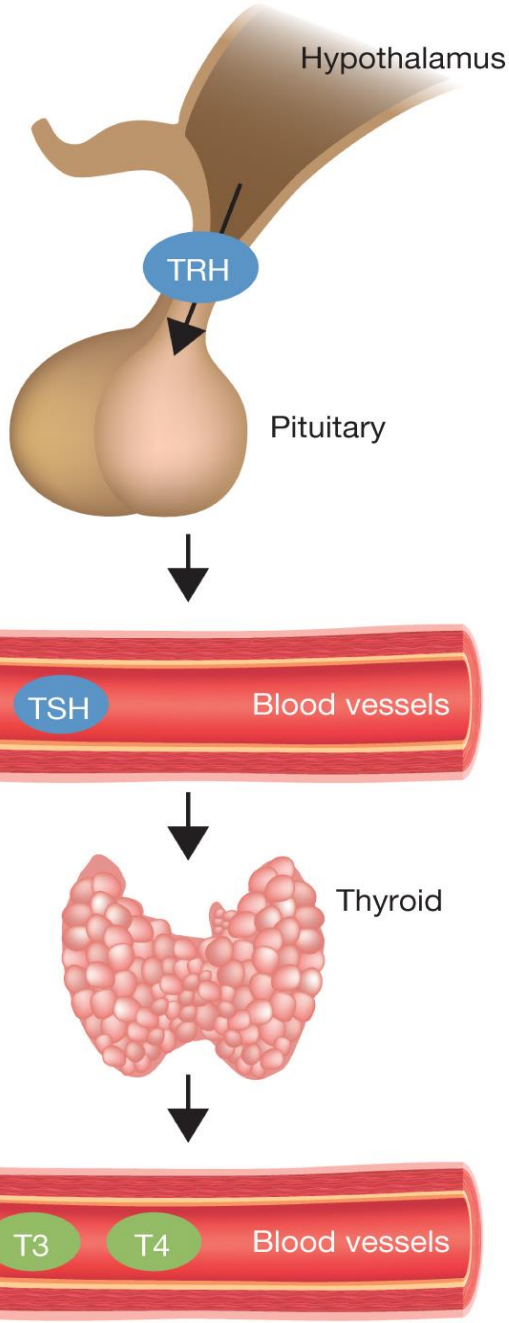
“Forty percent of the American people—four of every ten children and adults—today are suffering needlessly and many are dying for lack of an ingredient vital for health. Is the ingredient unknown? No. Or unavailable? No. For years, medicine has recognized the role of the deficiency in some areas of health and disease and has had clues to its great importance in many other areas. But the knowledge too often has not been used—and still is not being used—because of the unreliability of laboratory tests that have failed to show the deficiency even when doctors could see its manifestations clearly enough in patients before them. And while laboratory tests have erred and have misled both doctors and patients, patients have suffered.”

Broda O. Barnes, M.D. Introduction to *Hypothyroidism, The Unsuspected Illness.* 1976.

Why is thyroid hypofunction so prevalent?

- Lack of sufficient iodine
- Exposure to halogenated compounds
- BPA
- Polychlorinated (PCB) and polybrominated (PBB) biphenyls
- Phthalate esters and metabolites
- Red Dyes #3
- Several pharmacologic agents-
- Many drugs have increased levels of fluoride
- **Thyroid Disrupting Effects of Old and New Generation PFAS**
- https://www.frontiersin.org/articles/10.3389/fendo.2020.612320/full

Chemicals		Bioactive food compounds
Hypothalamus related effects Phthalate Perchlorate	1	
Pituitary related effects BPA Phthalate Perchlorate	2	**Pituitary related effects** Caffeine
TSH serum levels related effects BPA Phthalate Perchlorate Pesticides PBDE		**TSH serum levels related effects** Polyunsaturated fatty acid (DHA) Polyunsaturated fatty acid (EPA) Caffeine Resveratrol
Thyroid related effects BPA Pesticides	3	**Thyroid related effects** Resveratrol
TH serum levels related effects BPA Phthalates Phenols Perchlorate Pesticides PBDE		**TH serum levels related effects** Polyunsaturated fatty acid (EPA) Pepper Piperine Caffeine Resveratrol Cinnamon



Why is primary thyroid hypofunction more common with females?

- Iodine is needed for every cell in the body
- But …Women have concentrated levels of iodine in breasts, ovary and thyroid, as we age we live in an anti-iodine world… drugs, water, bakery products

Symptoms associated with thyroid hypofunction

- Dry, scaly or itching skin
- Reduced initiative, mental confusion, poor memory
- Morning headaches that wear off during the day
- Increase in weight,
- Sensitivity to cold (rule out anemia and atherosclerosis)
- Dry brittle hair, hair falls out easily
- Low axillary temperature (*Barnes Thyroid Test*) Muscle cramps at rest
- Reduced immune function
- Edema, especially facial (myxedema)
- Constipation
- Loss of outside portion of eyebrows
- Beast, ovarian or uterine cysts/fibroids
- Increase in serum lipids

Symptoms associated with thyroid hypofunction

- Increase or decrease in blood pressure
- Tinnitus
- Impaired hearing
- Depression
- Myxedema
- Premature grey hair, red hair
- Type 1 diabetes
- Left-handedness
- B-12/folate anemia
- vitiligo

Factors

3 major areas to consider with hypothyroid symptoms

- Thyroid itself
- Pituitary (hypofuncion)
- Adrenal Hyper function

Adrenal Involvement

- Thyroid Hypo-Function secondary to Adrenal Cortical Hyper-Function

- The adrenals are the gas and the body uses the pituitary and the thyroid as the brakes

- Therapeutic Goal:

Fix the adrenals and restart the pit-thyroid axis

Adrenal

- Cortisol is necessary to reduce inflammation but excess cortisol blocks the conversion of T4 to T3.
- Excess cortisol will cause a thinning of the lining of the bowel contributing if not causing leaky gut.
- Leaky gut causes excess immune activation and probably a major role in the autoimmune condition Hashimoto's thyroiditis.
- Excess cortisol slows the conversion from T4 to T3, it can increase reverse T3 and affect gut flora and permeability

Overcoming Thyroid Disorders

- Hypothyroidism
- Poor T4 Converters and Thyroid Hormone Resistance
- Fibromyalgia and Chronic Fatigue Syndrome
- Hyperthyroidism and Autoimmune Disorders
- Natural Hormones
- Diet
- Detoxification
- Coagulation Disorders

Thyroid Hormone

- Affects every cell in body
- Cannot achieve optimum health without a properly functioning thyroid gland
- Hypothyroidism may be the most commonly missed diagnosis today
- 40% of the population may have undiagnosed hypothyroidism.

Triclosan and Thyroid

- Antibacterial agent (chlorinated, organic molecule similar to Bisphenol A) found in many household products
  - Toothpaste, mouthwash, soap, deodorants, shaving cream, cleaning supplies, kitchen utensils, trash bags, clothing, bedding, children's toys

Toxic. Scienc. 2008. 10.1093

Triclosan and Thyroid[2]

- Newborn rats fed varying amounts of triclosan for 31 days
- Results: Decrease in T4 concentrations with increasing concentrations
- Significant increases in liver weights with higher doses

Thyroid Production

Thyroid

↓

T4

↓

T3

↓

Effects On Body

Sunscreen Inhibits Thyroid Function

- Animal studies
- Rats treated with 4MBC and Benzophenone 2 (BP2) for five days found to have significantly increased TSH and lower T4.
  - Weight of thyroid glands increased
  - All above results prevented if there was adequate iodine present

"The work has shown that MBC and BP2 are potent disrupters of the pituitary-thyroid hormonal system in rats. If the same effect is discovered in humans, then we may have to rethink how we protect our children and those with existing thyroid problems or those in iodine-deficient areas from sun exposure."

2006. Europ. Congress of Endocrin. Presentation.

Hypothyroidism and Atherosclerosis

- 2550 Subjects
- Subclinical hypothyroidism associated with a 260% increase in the prevalence of heart disease.

J. Clin. Endocrinol. Metab. 2004;89:3365-3370

Hypothyroidism and Atherosclerosis

- TSH receptor is expressed on coronary arteries and adipocytes
  - Elevated TSH may directly affect endothelial function of coronary arteries or fat cells
    - Induce ischemic heart disease in hypothyroidism.

Hypothyroidism and Neurodevelopment

- 169 participants
  - 53 children of mothers with hypothyroidism
    - Treated with L-Thyroxine shortly before or during pregnancy
    - TSH was only monitor used
  - 116 controls
- Evaluated at 6, 12 and 18 months and a neuropsychological evaluation at 5 years

FP News. 12.1.04

Hypothyroidism and Neurodevelopment

- Infancy
  - Children of hypothyroid mothers found to have abnormal visual processing, deficits in attention and as well as sensorimotor skills and memory
  - At age 5, mean IQ 8 points lower in children of hypothyroid mothers
    - Also had lower scores on tests of working memory, as well as verbal and associative learning

FP News. 12.1.04

IQ and Maternal Hypothyroidism

- Children of mothers with untreated hypothyroidism v. mothers without hypothyroidism
- IQ scores were 7 points lowered in children of untreated mothers
- 19% of untreated mothers had children with IQ <85 compared with 5% of others

N. Eng.J. of Med. 1999;341: 549-55

Low T4 Levels Correlated With Neurodevelopment Problems

- 220 Children
- Neurodevelopmental Assessment at 10 months
- 22 Children of mothers having the lowest T4 at 12 weeks gestation scored significantly worse on the Psychomoter Developmental Index as compared with the others.

Clin. Endocrin. Oxf. 2003:59:282-8

Thyroid Disease and Preterm Delivery

- Increased risk of spontaneous abortion
  - Women with hypothyroidism or thyroid antibodies
- 200% increase risk of preterm delivery in those women that had hypothyroidism

FP News. 1.15.05

Hypertension and Hypothyroidism

- Dr. Barnes felt there was a link between HBP and hypothyroid
- Reviewed his records over 10 year period
- Of 95 patients who presented with hypertension and hypothyroidism, 95% (90) showed a significant decline in blood pressure after treatment for hypothyroidism

Lab Work

- **Blood Tests**
- **TSH, T4 total, T3 total, Reverse T3,** T3 Uptake;
- Free Thyroxine Index, Triiodothyronine, Free,
- Thyroid Peroxidase (TPO) Ab; Antithyroglobulin Ab
- **24 Hour urine testing**
- **Serum Ferritin**
- **Serum B12 (>450pc/ml)**
  - **Clinical Pearls, March 1997, Vol. 7, No. 3.**

HASHIMOTO'S THYROIDITIS

- Irrespective of the TSH, T-3, T-4 and/or free thyroxine index (FTI/T-7), if the anti-TPO and/or anti-thyroglobulin ab is increased, Hashimoto's is present. Hashimoto's can be present with normal TSH, T-3 and T-4, with thyroid hypofunction and with thyroid hyperfunction; however, it is more common with thyroid hypofunction.

HASHIMOTO'S THYROIDITIS

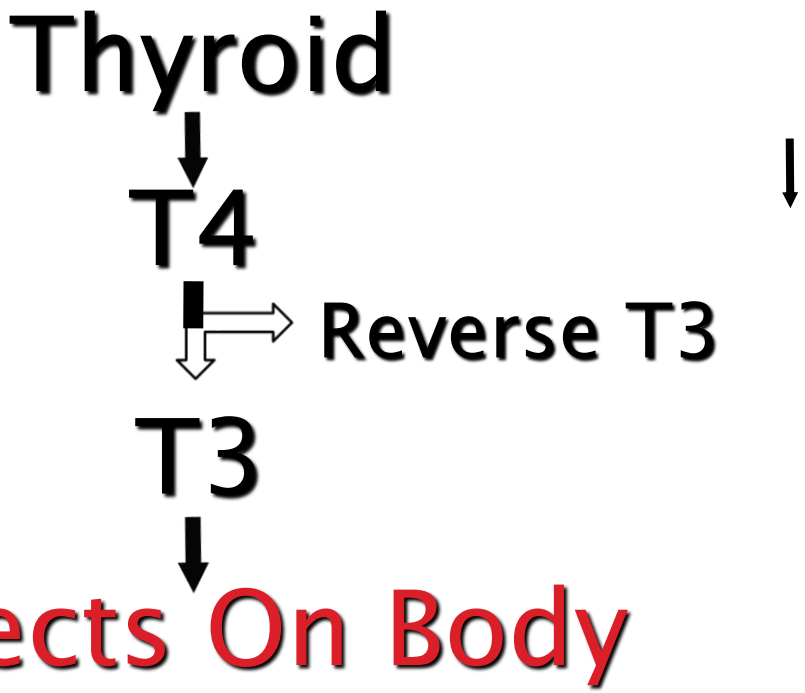
- Based on clinical investigation by Dr. Steve Nelson, Dr. Jack Hintz and Dr. Harry O. Eidenier, Jr., the following should be ruled out with Hashimoto's
  - With thyroid hypofunction, rule out metal body burdens, reduced gut immunity and/or virus as locus to the thyroiditis.
  - With thyroid hyperfunction, rule out petrochemical poisoning, nanobacterial infection and/or food/environmental allergy as locus to the thyroiditis.

TSH and Thyroid Cancer

- 50 euthyroid subjects undergoing thyroidectomy
- 1/3 found to have thyroid cancer
  - Higher mean TSH (1/5mIU/L) as compared to those with benign disease (1.01miU/ml)
  - 8.7x increase risk of thyroid cancer in subjects with TSH in upper three quartiles of TSH values (1.2-3.7) compared to the lowest quartile (0.34-1.1)
  - T3 levels lowered in those diagnosed with thyroid cancer (113ng/dl) as compared to those with benign disease (130ng/dl).

Thyroid. Vol. 18. N. 9, 2008. 943-952

Reverse T3



TSH Is A Poor Test

"The biological effects of thyroid hormones at the peripheral tissues- and not TSH concentrations- reflect the clinical severity of hypothyroidism.

A judicious initiation of (thyroid hormone) treatment should be guided by clinical and metabolic presentation and thyroid hormone concentrations and not by serum TSH concentrations."

BMJ 2003;326:311-312

TSH

"TSH above 2.0mU/L is a risk factor for future development of hypothyroidism, especially when TPO is detected. This is true even in the absence of thyroid antibodies. Ultimately, the diagnosis and efficacy of treating subclinical hypothyroidism should not be based on the TSH reference range alone, but should integrate the degree of TSH elevation with patient-specific risk factors and the concentration of TPO antibodies."

FP NEWS. 6.15.07

Fetal Death, Impaired Development and Neonatal Hypothyroidism

- 9,403 Women
- TSH measured during second trimester
- 2.2% had TSH >6mU/L
- Rate of fetal death was over 4x higher in women with elevated TSH

J. Med. Screen. 2000;7:127-30

TSH and Weight

Framingham study. 2407 participants followed for 3.5 years.

- Women:
  - Weight increased by 2.3kg for every 1-unit increment in TSH concentration
- Men:
  - Weight increased by 1.1kg for every 1-unit increment in TSH concentration

"Change in serum TSH concentrations over time (within reference range) was strongly and linearly associated with weight gain."

Arch. Intern. Med. Vol. 168 (No. 6), 3.24.08

TSH and ADHD

- 4 year old children
- TSH levels and neurobehavioral changes
- High normal TSH levels (>75th Percentile) negatively associated with memory and verbal and quantitative skills
  - Positively associated with hyperactivity/impulsivity symptoms
  - TSH >2.2 presented lower neurodevelopmental scores as well as higher risk of attention and impulsivity/hyperactivity symptoms.

Clin. Endocrin. Oxf 2007. Jun;66(6): 890-8

Thyroid Function and Alzheimer's Disease

- 209 Participants
- 12.7 years follow-up
- Women in the lowest (<1.0mIU/L) and highest (>2.1 mIU/L) of serum TSH concentration had increased risk of Alzheimer's disease compared to those in middle tertile (0.5-5.0mIU/L)
- Lowest tertile: 239% increase
- Highest tertile: 215% increase

Arch. Int. Med. Vol. 168, No. 14, 7.28.08

How To Check The Basal Body Temperature

- Shake thermometer down at night
- In A.M., take axillary temperature before arising for 10 minutes
- Menstruating women should take their temperatures on days 2-4 of cycle
- Normal axillary temperature is 97.8-98.2

Diagnosing Hypothyroidism

- History
- Physical exam
- Basal Body Temperatures
- Blood Tests.

Comparing Thyroid Medications

Desiccated Thyroid

- T1
- T2
- T3
- T4
- Calcitonin
- Diuretic Effect
- Selenium

Levothyroxine Sodium

- T4

Other Thyroid Rx. Choices

- Nature-Throid and Westthroid
  - Corn-free, desiccated thyroid hormone
- Compounded Desiccated Thyroid Hormone
  - No fillers
  - Adjust dosage
- Compounded T3
  - Slow release
  - No fillers

Synthroid and Levothroid Are Inadequate Drugs According to FDA

"…no currently marketed orally administered levothyroxine sodium product has been shown to demonstrate consistent potency and stability and thus, no currently marketed orally administered levothyroxine sodium product is generally recognized as safe and effective."

Federal Register: August 14, 1997 (Vol. 62, Num 157)

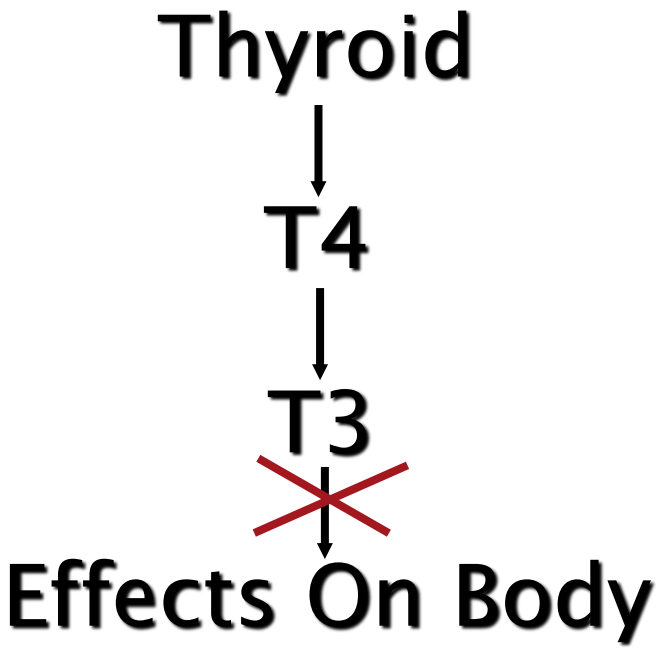
Desiccated Thyroid Treatment

- Adults: Start at ½ grain
- Elderly, heart disease history: Start at ¼ grain and go slowly
- Monitor basal temperatures, lab work, physical exam signs and symptoms.

Overcoming Thyroid Disorders

- Hypothyroidism
- Thyroid Hormone Resistance and Poor T4 Converters
- Fibromyalgia and
- Hyperthyroidism and Autoimmune Disorders
- Natural Hormones
- Diet
- Detoxification
- Coagulation Disorders

Thyroid Hormone Resistance



Thyroid Hormone Resistance

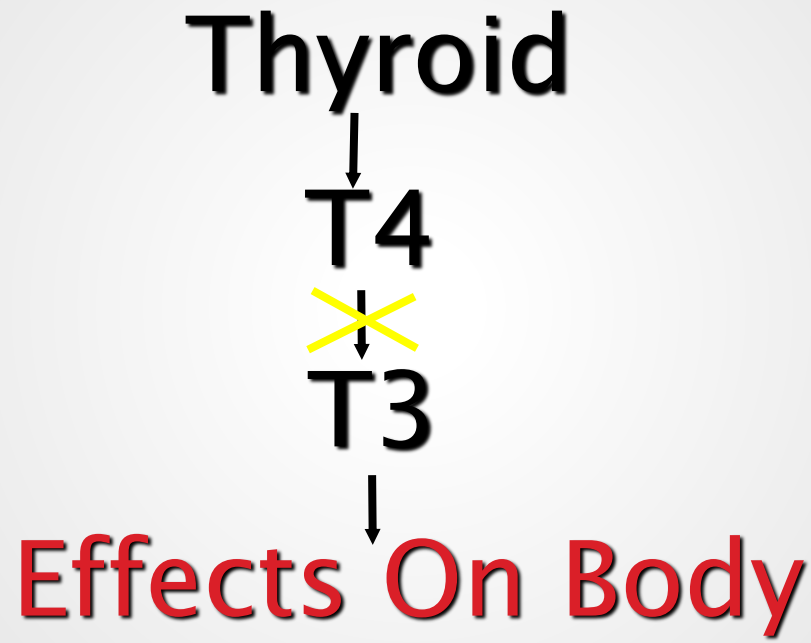
- Target tissues of body have reduced responsiveness to thyroid hormone
  - First described in 1967
- Can occur with adequate production of thyroid hormone
- Analogous to adult onset diabetes

Laboratory tests will be inaccurate!

Thyroid Hormone Resistance

- Genetic anomalies of thyroid hormone receptors
- Autoimmune, oxidative, or toxic damage to thyroid-hormone receptors
- Competitive binding to thyroid-hormone receptors by pollutants, food additives, etc.

T4 Conversion Block



Thyroid Hormone Levels in Cardiac Tissue and Iodine Deficiency

- Iodine deficiency in rats resulted in subclinical hypothyroid picture
  - Elevated TSH with normal T4 and T3

Despite normal T3 levels, cardiac tissue was found to be deficient in T3.

T4 therapy was unable to correct the cardiac deficiency, in the presence of iodine deficiency.

Acta. Endocrin. (Copen). 120;490-98.1989

J. Clin. Invest. 96;2828-38, 1995

T4 to T3 Inhibitors

Nutrient Deficiencies

- Iodine
- Iron
- Selenium
- Zinc
- Vitamin A
- Vitamin B2
- Vitamin B3
- Vitamin B6
- Vitamin B12

Medications

- Beta Blockers
- Birth Control Pills
- Estrogen
- Iodinated Contrast Agents
- Lithium
- Phenytoin
- SSRI
- Theophylline

T4 to T3 Inhibitors (2)

- Aging
- Alcohol
- Alpha-Lipoic Acid
- Chemotherapy
- Cigarette Smoking
- Cruciferous Vegetables
- Diabetes
- Fasting
- Fluoride
- Growth Hormone Deficiency
- Hemochromatosis
- Lead
- Low Adrenal State
- Mercury
- Pesticides
- Soy
- Stress
- Surgery
- Radiation

T4 to T3 Inhibitors

Nutrient Deficiencies

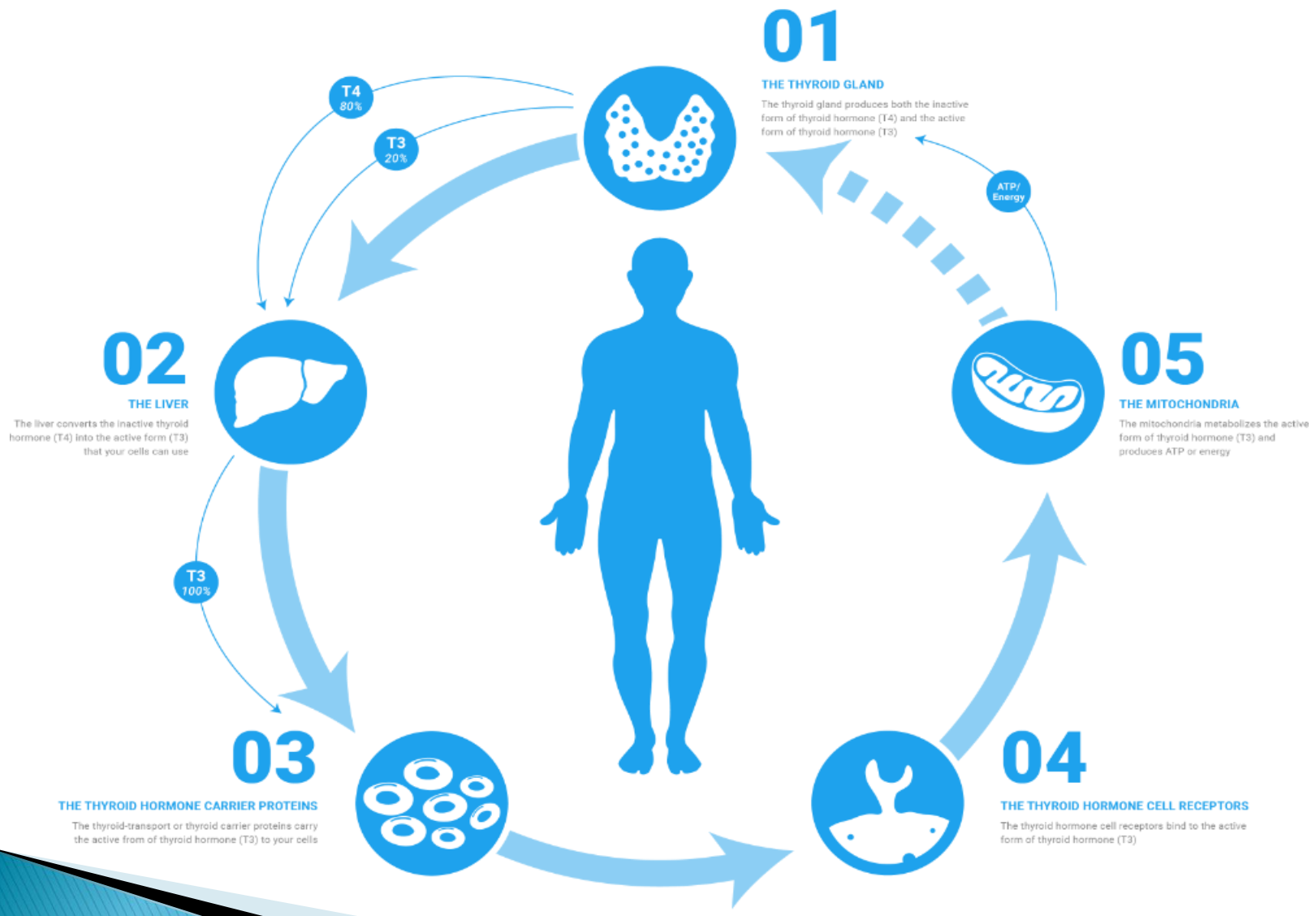
- Iodine
- Iron
- Selenium
- Zinc
- Vitamin A
- Vitamin B2
- Vitamin B6
- Vitamin B12

Medications

- Beta Blockers
- Birth Control Pills
- Estrogen
- Iodinated Contrast Agents
- Lithium
- Phenytoin
- Theophylline

Thyroid Hormone Pathway

CONVERSION CYCLE



1. Unblock the liver

•Re-activate the conversion of your thyroid hormone into the active form your body needs.

•Re-activate your primary detoxification pathway so you can detoxify your many thyroid suppressive hormones and toxins.

•De-activate your stress response that’s suppressing your thyroid.

1. Unblock the liver

- **Balance blood sugar to stop the stress**
- **Healthy liver stores sugar in the form of GLYCOGEN**
- **Hypothyroidism reduces ability to produce glycogen**
- when you can't balance your blood sugar **the healthy way…** Your body does so in a very unhealthy way, by overproducing stress hormones in order to keep you alive.
- The stress hormones take over by breaking down your healthy muscle tissue to convert int sugar to keep your brain functioning.
- At the same time they suppress your thyroid function, by blocking your liver from converting thyroid hormone into the active T3 form.
- **Glucocorticoids decrease in conversion of thyroxine into 3, 5, 3'-tri-iodothyronine by isolated rat renal tubules.**
- they further suppress your thyroid function by increasing your production of Reverse T3, which further blocks your T3 from getting to your cells.
  http://www.clinsci.org/content/62/2/215
- **https://academic.oup.com/endo/article-abstract/122/6/2915/2531236?login=false**

2. Detoxify Thyroid Suppressive Hormones

- Glycogen important storage; hypothyroidism lose the ability to produce it.
- Glycogen is necessary for the production of glucuronic acid.
- Glucuronic acid is necessary for the detoxification of thyroid suppressive hormones, like estrogen.
- This is one reason why hypothyroidism sufferers can't detoxify estrogen, which builds up in the tissue and further suppresses thyroid function.
- Estrogen dominance. Estrogen affects thyroid function **on multiple levels**…
  1. Directly blocks the thyroid gland from releasing thyroid hormone.
  2. Promotes the production of thyroid suppressive stress hormone
  3. Suppresses metabolism.

Estrogen affects immune system

- Estrogen affects immune system
- Direct link between estrogen dominance and the autoimmune condition Hashimoto's thyroiditis, as shown in this study.

- **2-Methoxyestradiol, an endogenous estrogen metabolite, induces thyroid cell apoptosis.**
  https://www.sciencedirect.com/science/article/pii/S0303720700002495
  "Prolonged exposure to 2-ME led to apoptosis and to increased release of the autoantigen thyroid peroxidase (TPO)."
- **Selenium deficiency, thyroid hormone metabolism, and thyroid hormone deiodinases.**
  https://academic.oup.com/ajcn/article-abstract/57/2/236S/4715275
  "selenium was recently shown to be an essential component of type I iodothyronine 5′-deiodinase in rats, which converts thyroxin to the more biologically active hormone 3,5,3′-triiodothyronine."

DIET & THYROID

- **Carbs are thyroid friend**
- Low carb diets result in…
  - Fall in active T3 thyroid hormone.
  - Rise in thyroid blocking Reverse T3 hormone.
  - Fall in metabolic rate and energy production.
- **Hormonal and metabolic changes induced by an isocaloric isoproteinic ketogenic diet in healthy subjects.**
  http://www.ncbi.nlm.nih.gov/pubmed/6761185
  "A significant fall in triiodothyronine and rise in reverse triiodothyronine were observed, while thyroxine levels remained unchanged."
- **Sucrose substitution in prevention and reversal of the fall in metabolic rate accompanying hypocaloric diets.**
  http://www.ncbi.nlm.nih.gov/pubmed/3740086
  "The fall in both resting metabolic rate and triiodothyronine concentration was markedly reduced as compared with values during the carbohydrate-free diet. It is concluded that carbohydrate restriction plays an important role in mediating the fall in resting metabolic rate during hypocaloric feeding."

PRIMARY MILD HYPOTHYROIDISM

Address the “raw materials” body needs to CREATE thyroid hormones

- Iodizyme HP
- Tyrosine
- Selenomethionine
- Balanced B8
- Rubidium

PRIMARY CLINICAL HYPOTHYROIDISM

Address first the “raw materials” body needs to CREATE thyroid hormones

- Iodizyme HP
- Tyrosine
- Selenomethionine
- Balanced B8
- Rubidium

- ADD
- GTA or GTA FORTE II

HYPOTHYROIDISM WITH HIGH ANTIBODIES

Apply the previous components and add:

- BioAshwagangha 2 x 2 E
- IAG 1-2 tbsp E
- WAIT 1-2 MONTHS, THEN ADD:
- IODIZYME HP

HYPERTHYROIDISM

- Heavy metal detox
- Parasite, fungal
- Dental work… implants, root canals
- Adrenal hypofunction
- IAG
- PORPHYRAZYME
- CARBAMIDE PLUS
- ADHS