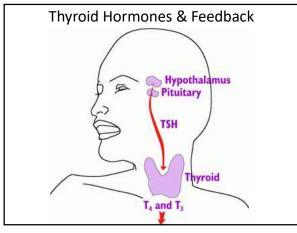




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## **Thyroid Hormones**

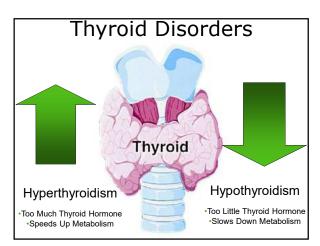
- TRH: produced in hypothalamus to stimulate TSH
- TSH: produced in pituitary to stimulate T4&T3
- T4 (Thyroxine): main hormone produced in thyroid gland ~80%. It is biologically inactive.
- T3 (triiodothyronine): active thyroid hormone, ~20% of hormone produced in thyroid gland, but also converted from T4 in liver, kidney and other tissues.





# **Thyroid Hormone Function**

- Regulates metabolism
- Essential for body's growth and development
- Important for proper nervous system function
- Important for proper hormonal function



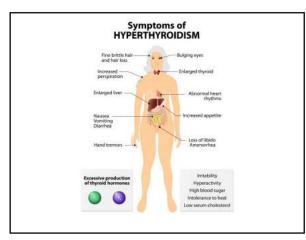


Typical Thyr Thי	oid Hori yroid Di		evels in
Hypothyroidism Hyperthyroidism	TSH High Low	T₄ Low High	T <sub>3</sub> Low High



## Hyperthyroidism

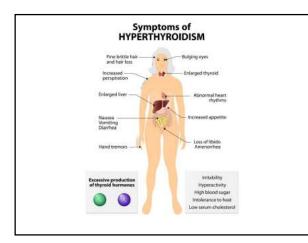
- A condition of excess synthesis & secretion of thyroid hormones , which results in accelerated metabolism in peripheral tissues
- Affects about 1% of the U.S. population or 2 Million Americans
- More common in women







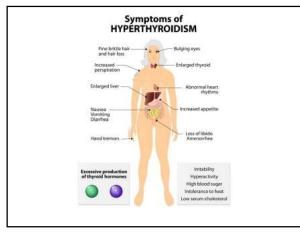














#### Major Causes of Hyperthyroidism

- Grave's Disease: autoimmune disorder of the thyroid gland
- Thyroiditis: inflammation of thyroid causing increased hormone production, can be start of Hashimoto's Thyroiditis
- Thyroid Tumors
- Postpartum Thyroiditis
- Excessive Thyroid Medication
- Drug Reaction

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#### Treatment for Hyperthyroidism

#### Conventional

- Temporary Treatments
  - Anti-thyroid drugs: PTU (Propylthiouracil) or other thyroid blocking drugs
- Beta Blockers: category of blood pressure pills that calms some of the symptoms of hyperthyroidism
- Permanent Treatments
- Surgical removal of part or all of the thyroid gland
- Radioactive iodine to destroy the thyroid gland

### Treatment for Hyperthyroidism

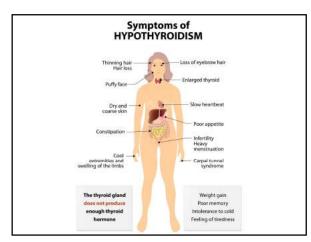
Naturopathic

- Assess and treat the actual cause
  - Diet
  - Herbs
  - Vitamins and minerals
  - Amino Acids

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## Hypothyroidism

- A disorder with multiple causes in which the thyroid fails to secrete an adequate amount of thyroid hormone.
- 1%-4% of the population has moderate to severe hypothyroidism
- 10%-12% of the population is thought to have mild hypothyroidism
- 10%-15% may suffer with subclinical hypothyroidism





### Major Causes of Hypothyroidism

- Hashimoto's Thyroiditis
- Iodine deficiency: not common in U.S.
  also iodine excess can cause hypothyroidism
- Congenital Hypothyroidism
- Postpartum Thyroiditis
- Drug induced: lithium, antithyroid therapy
- Wilson's Syndrome

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#### Treatment for Hypothyroidism

**Conventional Treatment** 

- Synthroid, Levoxyl, or other levothyroxine drugs
- Synthetic T4 only thyroid replacement drug
- Some patients will have trouble with peripheral conversion of T4 to T3, which may cause excessive dose to be prescribed and/or patient never feels as good as they would with a T4/T3 thyroid replacement.

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### Treatment for Hypothyroidism

Naturopathic

- Assess and treat the cause
  - Diet
  - Herbs
  - Vitamins and minerals
  - Amino Acids
  - Exercise
- Patients may need natural or synthetic hormone replacement from their MD

### Treatment for Hypothyroidism

Hashimoto's Thyroiditis – Multi-Pronged Approach

- 1. Assess and treat the cause
- 2. Need thyroid replacement most of time
- 3. Diet and supplements to heal immune system
- 4. Nutrients to help thyroid function and help with conversion from T4 to T3
- 5. Occasionally work with MD for other meds to heal immune system.

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### Treatment for Hypothyroidism

Hashimoto's Thyroiditis – Important Testing

- TSH, Free T3, Free T4, Reverse T3
- Thyroid Peroxidase and Thyroglobulin Antibodies
- Total Iron, TIBC, Ferritin
- Vitamin D (25-Hydroxy Vitamin D)
- Progesterone
- Cortisol (Salivary): 4 samples through day

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### Treatment for Hypothyroidism

Hashimoto's Thyroiditis – Other Testing

- Genetic Testing Methylation Cycle
- Comprehensive Stool Analysis

Naturopathic vs Conventional Care

Naturopathic medical care works in conjunction with the care you're receiving from your other doctors

You will never be placed in a situation where you have to choose one or the other

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