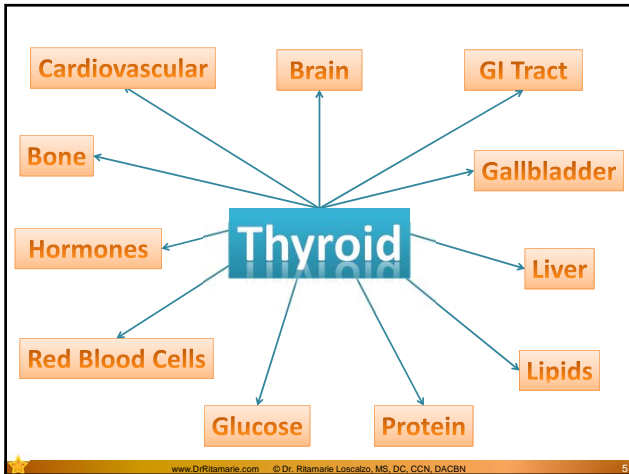


### HPAT Assessment Tools

- ✓ Asking the Right Questions
- ✓ Symptom Surveys
- ✓ Physical Exam
- ✓ Blood Chemistry
- ✓ Functional Assessments
  - Adrenal Stress Index
  - Fatty Acids
  - Amino Acids
  - Organic Acids
  - Steroid Hormone Panels
- ✓ Home Testing
  - Body Temperature
  - Iodine Patch Test
  - pH Testing
  - Mineral Testing
  - Konisberg
  - Blood Sugar
  - Postural Blood Pressure
  - Pupillary Constriction
  - Oxidata
  - Vitamin C Urine/Flush
  - HCl Challenge
  - Raglan's

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### Symptoms of Low Thyroid

- ✓ Low energy
- ✓ Sluggish digestion
- ✓ Weight gain or inability to lose weight
- ✓ Dry skin, hair loss, brittle nails
- ✓ Low blood pressure
- ✓ Thinning hair
- ✓ Cold hands and feet
- ✓ Sensitivity to cold
- ✓ Low body temperature or always feeling chilled
- ✓ Constipation
- ✓ Frequent infections
- ✓ Hoarse voice
- ✓ Ringing in the ears
- ✓ Puffy eyes
- ✓ Joint aches
- ✓ Loss of libido
- ✓ Headaches, dizziness
- ✓ Insomnia
- ✓ Depression and/or mental dullness
- ✓ Elevated cholesterol

### Symptoms Of Excess Thyroid

- ✓ Feeling hot
- ✓ Increased appetite
- ✓ Weight loss without trying
- ✓ Fatigue at the end of the day
- ✓ Difficulty falling asleep
- ✓ Trembling of the hands
- ✓ A hard or irregular heartbeat (palpitations)
- ✓ Irritability
- ✓ Increased bowel movements
- ✓ Light or absent menstrual periods
- ✓ Shortness of breath
- ✓ Chest pain
- ✓ Hair loss
- ✓ Muscle weakness

### Thyroid Physical Assessment

Body Sign	What to Look For
Temperature - Oral	first AM - below 98 flat throughout the day
Achilles reflex	sluggish
Between 2nd and 3rd ribs near sternum on right	tenderness
Calf Bone	edema
Rib Borders	tenderness
Hair	dry, thin
Nails	cracked
Skin	dry, flaky, hives, lesions or roughness on the shins, and blister-like bumps on the face
Neck	mass
Blood Pressure	low
Pulse	Low
face	puffiness and eyebrow loss
Eyes	protrusion, eyelid retraction and other potentially thyroid-related signs
Movement	Tremor, shakiness
Speech	Shakiness, slowness, hoarseness of voice
Hands and feet	Swelling

### Thyroid Self Exam Signs

#### Thyroid Low (Hypo)

- ✓ "Goose flesh" at the backs of arms or thighs
- ✓ Scalloped edges and teeth marks on tongue
- ✓ Cold hands and feet
- ✓ Non-pitting edema (Myxedema)



#### Thyroid Excess (Hyper)

- ✓ Severe proptosis, periorbital edema, and eyelid retraction (Eyes "bug-out")
- ✓ Scalloped edges and teeth marks on tongue



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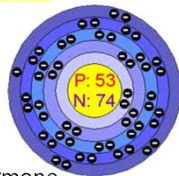
### Adrenal vs. Thyroid Major Symptom Differentiations

Sign or Symptom	Hypothyroid Tendency	Hypoadrenal Tendency
Body temperature	Low and consistent	Low and fluctuates
Energy pattern	Generally sluggish	"Wired and tired"
Body type	Difficulty losing fat	Difficulty gaining muscle
Blood pressure	Normal to high	Low to normal
Total cholesterol	High	Low
Facial color	Reddish	Pale
Sweating	Scanty or none	Profuse
Bowels	Sluggish / constipated	Irritable or hyper functioning

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### The Iodine Dilemma

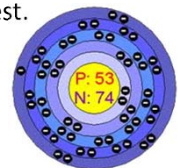
- ✓ **Dr. Datis Kharrazian:** Avoid iodine in Hashimoto's
  - ✓ **Dr. David Brownstein:** Lots of iodine
- What's TRUE?**
- ✓ We **NEED** iodine to make Thyroid Hormone
  - ✓ **Iodine Sodium Transporter:** (NIS) Concentrates iodine from blood into thyroid
  - ✓ Deficiencies and epidemic of low stomach acid
  - ✓ Land is deficient; sea vegetables not popular
  - ✓ According to Brownstein, Japanese consume 13g/d
  - ✓ Testing: Iodine Load vs. Iodine Patch



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### How To Do an Iodine Load Test

- ✓ **Stop** ingesting iodine and iodine containing foods *24 to 48 hours* before the test.
- ✓ **Discard first morning urine.**
- ✓ **Take 4 tablets of Iodoral®.**
- ✓ Start collection of urine, following instructions from the lab.
- ✓ The **first void on the following morning** should be included in the urine collection.
- ✓ If total urine volume is above 3 liters, follow instructions supplied with the kit.



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### Low Thyroid Causes

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### Nutrient Imbalances

- ✓ **Iodine:** vital part of the thyroid molecule
- ✓ **Selenium and Riboflavin** for converting iodine and tyrosine to thyroid hormone
- ✓ **Selenium** for converting T4 to T3
- ✓ **Vitamin A** regulates production of TSH
- ✓ **Vitamin D3** and bioflavonoid protect against thyroid cancer
- ✓ **Zinc** is needed for hypothalamus and pituitary stimulation
- ✓ **Vitamin B12** associated with decreased levels of an enzyme that activates thyroid hormone

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### GLUTEN INTOLERANCE

- ✓ Autoimmune reaction: attacks thyroid, anti-thyroid antibodies
- ✓ Hashimoto's Thyroiditis
- ✓ Gluten intolerance leads to inflammation
- ✓ 6 months gluten-free can clear antibodies

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### STRESS

- ✓ Excess cortisol **damages thyroid receptors** and causes thyroid resistance.
- ✓ Insufficient cortisol **lowers thyroid receptor sensitivity.**
- ✓ Excess cortisol **decreases T4 to T3 conversion** (impairs 5' deiodinase enzyme).
- ✓ Excess cortisol **increases blood sugar and insulin**, which decreases thyroid function.
- ✓ Cortisol and corticotrophin-releasing hormone **inhibit TSH.**
- ✓ Impairs **thyroxine-binding globulin.**
- ✓ Impacts immune system.
- ✓ **Creates inflammation:** cytokines: IL-1 beta, IL-6, and TNF-alpha which impair conversion, receptors and TSH activity

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## BLOOD SUGAR SWINGS

✓ **Blood sugar imbalances weaken and imbalance:**

- gut
- hormone levels
- lungs
- adrenal glands
- brain
- detoxification pathways

✓ **This leads to**

- impaired metabolism
- weakened thyroid function

✓ **As long as you *have blood sugar dysregulation*, whatever you do to fix your thyroid isn't going to work!**



## SMOKING

✓ **Reduced serum T3 and T4** levels in heavy smokers

✓ Reduced **thyrotropin** (hypothalamus) concentrations

✓ Increased incidence of goiter

✓ Increased risk of thyroid cancer

✓ Increased incidence of Graves' disease (hyperthyroid)

✓ Increased thyroid-associated ophthalmopathy



## Standard Western Medicine Approach to Thyroid Dysfunction

- ✓ Test TSH
- ✓ If high, test T4 and prescribe synthetic T4
- ✓ If low, suspect Graves' disease and do a scan
- ✓ If Graves', prescribe anti-thyroid drugs and radioactive iodine to kill the thyroid then prescribe synthetic T4



## Types of Thyroid Dysfunction

- ✓ Hypothyroidism
  - Primary
  - Pituitary/Hypothalamus
- ✓ Hyperthyroidism
- ✓ Autoimmune Thyroid Conditions
  - Graves' Disease
  - Hashimoto's Thyroiditis
- ✓ Subclinical Thyroid Conditions
  - Binding Protein Problems
  - Conversion Problems
  - Thyroid Receptor Resistance
  - Wilson's Temperature Syndrome
- ✓ Cancer



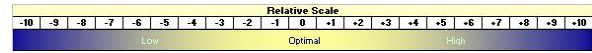
### Complete Thyroid Lab Panel Think Optimal Range!

- ✓ TSH (1-3)
- ✓ Total T4 (thyroxine) (6-12)
- ✓ Total T3 (triiodothyronine) (100-180)
- ✓ Free T4 (1-1.4), Free T3 (3-4)
- ✓ Thyroid Antibodies – all 0 or close to it
  - Thyroid Peroxidase
  - Antithyroglobulin
  - Thyroid-Stimulating Immunoglobulin
- ✓ Thyroid-Binding Globulin
- ✓ Reverse T3 (ration T3:rT3 at least 20)
- ✓ T3 uptake, Free Thyroxine Index \*\*



\*\*Done on routine thyroid panels as an estimate of free T4 on thyroid binding globulin status. It's an inexpensive estimate of free T4

### Dr. Bruce Rind's Thyroid Scale



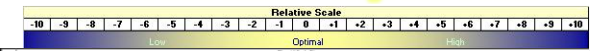
	Thyroid Scale Diagram													
Labs	-3	-2	-1	0	+1	+2	+3							
TSH	0.82	0.97	0.96	1.13	1.14	1.23	1.30	1.60	1.81	2.20	2.21	2.60	2.61	3.00
FT4	0.90	0.99	1.00	1.09	1.10	1.19	1.20	1.30	1.31	1.40	1.41	1.50	1.51	1.60
FT3	266	283	284	301	302	319	320	330	331	348	343	366	367	384

### Adjunctive Tests for Thyroid Imbalance

- ✓ Vitamin D
- ✓ Cholesterol
- ✓ Gut Microbes
- ✓ Glucose, Insulin, and Hemoglobin A1C
- ✓ Liver Function Tests
- ✓ Adrenal panel
- ✓ Estrogen
- ✓ Testosterone
- ✓ Iodine
- ✓ Ferritin



### Dr. Bruce Rind's Thyroid Scale



	Thyroid Scale Diagram - Healthy																				
Labs	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
TSH											1.50										
FT4											1.22										
FT3											326										

	Thyroid Scale Diagram - Hypothyroid																				
Labs	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
TSH											0.85										
FT4											294										
FT3																					

	Thyroid Scale Diagram - Early Hashimoto's (Hyperthyroid)																				
Labs	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
TSH											0.80										
FT4																					
FT3																					

	Thyroid Scale Diagram - Adrenal Fatigue																				
Labs	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
TSH											0.90										
FT4											0.95										
FT3											282										

	Thyroid Scale Diagram - Adrenal Fatigue w/Support																				
Labs	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
TSH											0.90										
FT4											0.89										
FT3											290										



Determining Thyroid Pattern												
	Units	Ideal Low	Ideal High	Primary Hypo Thyroid	Primary Hypo Thyroid	Auto Immune Hypo Thyroid	Auto Immune Hyper Thyroid	Under Conversion T4 to T3	Over Conversion T4 to T3	High Thyroid Binding Globulin	Low Thyroid Binding Globulin	Thyroid Resistance
TSH		1.8	3.0	H	L	N or H	L	N	N	N	N	N
Total T4	ug/dL	6.0	12.0	N or L	N or L	N or L	N or H	N or H	N or L	N	N	N
Free T4	ng/dL	1.0	1.5	N or L	N or L	N or L	N or H	N or L	N or L	L	H	N
T3 Uptake	mol/dL	28.0	38.0	N or L	N	N or L	N	L	H/N or H	L	H	N
Free T3	pg/mL	300.0	450.0	N or L	N or L	N or L	N or H	L	H/N or H	L	H	N
Reverse T3 (rT3)	pg/mL	90.0	350.0	N	N	N	N	L	N	N	N	N
Thyroid Antibodies		0	2	N	N	H	H	N or H	N	N	N	N
<b>PLUS</b>												
Cholesterol	mg/dL	0	200	N or H			N or L					
Triglycerides	mg/dL	35	160	H			L					
Calcium	mg/dL	8.7	10.5	N or H								
<b>Possible Causes</b>				deficiency of iodine or cofactors such as Se, Mg, Cu, zinc, riboflavin, B6 and zinc	deficiency of iodine or cofactors such as Se, Mg, Cu, zinc, riboflavin, B6 and zinc	antibodies to thyroid peroxidase, thyroglobulin (binding proteins), excess cortisol (stress), excess prolactin	antibodies to thyroid peroxidase, TSH, or viral	deficiency of cofactors, selenium, dopamine, gut dysfunction, inflammation (increased cytokines), excess cortisol (stress), excess prolactin	excess testosterone	excess estrogen	excess testosterone	inflammation (elevated cytokines), excess cortisol (stress), deficiency of Vitamin A, elevated homocysteine

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## Adrenal Assessment

- ✓ Symptoms (Surveys or Interview)
- ✓ Physical Signs (Exam)
- ✓ Routine Blood Testing (Indirect)
- ✓ Direct Blood Testing of Adrenal Hormones
- ✓ Saliva Testing
- ✓ Part of 24-Hour Urine Comprehensive Steroid Panel



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## Score Cards Review

- ✓ Have client fill in *Adrenal Assessment Scorecard*
- ✓ Ask questions
- ✓ Get a score before you start to rebuild adrenals
- ✓ Repeat the test afterwards



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## Exam Signs of Adrenal Problems

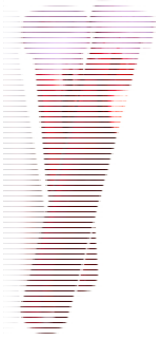
- ✓ Blood pressure goes down upon standing
- ✓ Pupils can't stay **constricted** with bright light
- ✓ Rib margin tenderness
- ✓ Brown or black **discoloration below eyelids**
- ✓ Dark gray or reddish back of tongue
- ✓ Ulcerations or **canker sores**
- ✓ Bad breath
- ✓ Rough, red, **flaky cuticles**
- ✓ Tongue signs



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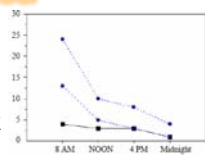
### Routine Blood Screen: Adrenal Analysis

<p><b>Low Adrenal</b></p> <ul style="list-style-type: none"> <li>✓ Potassium +</li> <li>✓ Sodium -</li> <li>✓ Glucose -</li> </ul>		<p><b>Hyper Adrenal</b></p> <ul style="list-style-type: none"> <li>✓ Potassium -</li> <li>✓ Sodium +</li> <li>✓ Glucose +</li> <li>✓ Triglycerides +</li> </ul>
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### Adrenal Saliva Testing vs Urine and Blood

- ✓ Non-invasive
- ✓ Convenient: The specimen can be collected at home or at work
- ✓ **Precision:**
  - Captures **hour by hour cycling** of adrenal hormones
  - Measures the **biologically active fraction** – blood reflects the protein bound
  - Samples are **stable for several weeks**



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### Symptoms of Over-Active Adrenals

- ✓ Cannot fall asleep
- ✓ Under high amounts of stress
- ✓ Weight gain when under stress
- ✓ Wake up tired even after 6 or more hours of sleep
- ✓ Excessive perspiration, or perspiration with little or no activity
- ✓ Tired and wired



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### Symptoms of Low Adrenals

<ul style="list-style-type: none"> <li>✓ Low energy</li> <li>✓ Frequent illness</li> <li>✓ Poor recovery from exercise</li> <li>✓ Dark circles under eyes</li> <li>✓ Tendency to pallor, especially around mouth</li> <li>✓ Ligament and tendon laxity</li> </ul>		<ul style="list-style-type: none"> <li>✓ Cold intolerance</li> <li>✓ Craves salt</li> <li>✓ Low blood pressure, especially upon arising</li> <li>✓ Thin, dry, dull hair that tends to fall out</li> <li>✓ Sparse hair on forearms or lower legs</li> <li>✓ Light sensitivity</li> <li>✓ Dry skin</li> </ul>
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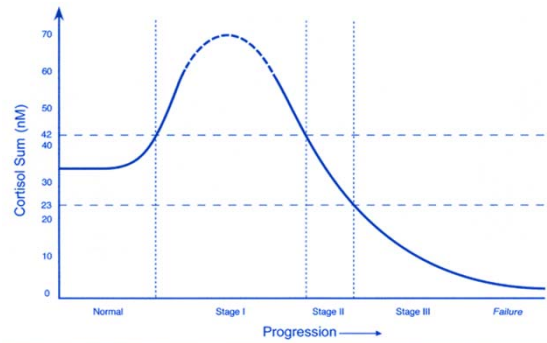


### Adrenal Home Testing

- ✓ Konisburg Adrenal Fatigue
- ✓ Oxidata
- ✓ Vitamin C Flush
- ✓ Zinc Taste Test
- ✓ Salivary pH Challenge



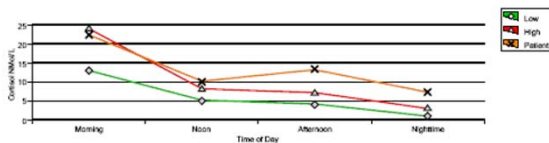
### Progression of Stages in Adrenal Exhaustion – per BioHealth



### BioHealth Example – Stage 1

Functional Adrenal Stress Profile - 201

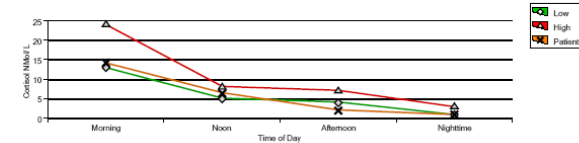
Parameter	Result	Reference Range	Units
Cortisol - Morning (6 - 8 AM)	22.4	13.0 - 24.0	nM/L
Cortisol - Noon (12 - 1 PM)	10.0*	5.0 - 8.0	nM/L
Cortisol - Afternoon (4 - 5 PM)	13.4*	4.0 - 7.0	nM/L
Cortisol - Nighttime (10 PM - 12 AM)	7.3*	1.0 - 3.0	nM/L
Cortisol Sum	53.1*	23.0 - 42.0	nM/L
DHEA-S Average	2.00	2.00 - 10.00	ng/mL
Cortisol/DHEA-S Ratio	26.6*	5.0 - 8.0	Ratio



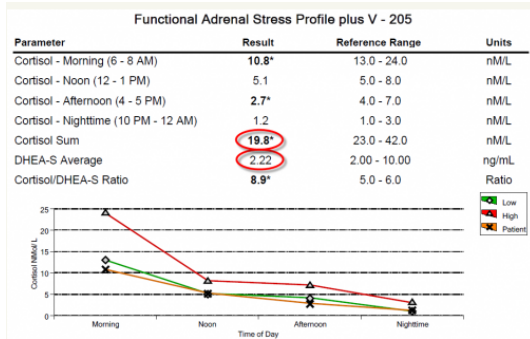
### BioHealth – Stage 2

Functional Adrenal Stress Profile - 201

Parameter	Result	Reference Range	Units
Cortisol - Morning (6 - 8 AM)	14.2	13.0 - 24.0	nM/L
Cortisol - Noon (12 - 1 PM)	6.4	5.0 - 8.0	nM/L
Cortisol - Afternoon (4 - 5 PM)	2.0*	4.0 - 7.0	nM/L
Cortisol - Nighttime (10 PM - 12 AM)	1.0	1.0 - 3.0	nM/L
Cortisol Sum	23.6	23.0 - 42.0	nM/L
DHEA-S Average	2.60	2.00 - 10.00	ng/mL
Cortisol/DHEA-S Ratio	9.1*	5.0 - 8.0	Ratio



### BioHealth – Stage 3



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