

Clinical Reference Guide

- Who has hormone deficiencies?
 - Men: Due to the steady decrease of approximately 2% per year of testosterone after the age of 25-1% due to Sex Hormone Binding Globulin (SHBG) and 1% to testicular atrophy
 - Women:
 - Irregular menstrual cycles in the young
 - Perimenopausal patient
 - Surgical menopausal and other
- What is optimal hormone level? Top 1/3 of "normal limits" for good hormones and very little for bad.
- What's the order of priority in hormone testing?
 - Thyroid
 - Sex Hormones (balancing)(vitamins)
 - Adrenals (replacement)
 - Growth Hormone
 - Others (Pregnenolone)
- How are hormones replaced? Safely stay within the physiological levels whenever possible EXCEPT FOR: PCOS and anovulatory cycle.
- What problems occur with hormone therapies when giving melatonin and GH? When a patient has a cortisol deficiency, these will aggravate hormone deficiency.
- What problem occur with hormone therapies when giving thyroid therapy?
 - Cortisol deficiency increases by increasing cortisol catabolism
 - Decrease in cortisol will increase the change of the T4 to T3 and precipitate a hyperthyroid incident (this occurs more frequently under stressful conditions).
 - Estradiol (E2) deficiency—low E2 causes an increase in the conversion of T4 to T3.
 - Thyroid deficiency aggravates thyroid deficiency by decreasing the conversion of T4 to T3
- What problems occur with hormone therapies when giving cortisol therapy?
 - DHEA deficiency--cortisol treatment suppresses adrenal function thereby decreasing ACTH and DHEA.
 - Aldosterone deficiency--cortisol will decrease ACTH, which will decrease aldosterone.
 - DHEA will decrease cortisol production by decreasing ACTH.
 - Fludrocortisone will decrease ACTH, which will decrease cortisol.
- Why is Estradiol (E2) elevated in a progesterone deficiency? Because Progesterone (P4) helps change E2 to Estrone (E1), which then converts to Estriol (E3), therefore if P4 is low, E2 will raise b/c the conversion from E2 to E1 and E1 to E3 won't occur.

- Why elevate Estradiol (E2) in a thyroid deficiency? Because it increases Thyroxine Binding Globulin (TBG) and decreases the conversion for T4 to T3.
- Why elevate Estradiol (E2) in a testosterone deficiency? Because it increases Sex Hormone Binding Globulin (SHBG) and blocks androgen receptors.
- Why does elevated progesterone aggravate aldosterone deficiency? Because progesterone blocks the aldosterone receptors in the kidney.
- Testosterone therapy with Estradiol (E2) deficiency causes what? An increase in the conversion of Estradiol (E2).
- What's the preferred route of administration for the following hormones;
 - Melatonin—SL
 - GH—SQ
 - Thyroid—PO
 - Calcitonin—Nasal
 - Cortisol—PO
 - DHEA—PO/SL
 - Estradiol—Transdermal
 - Progesterone—Vaginal/PO
 - Testosterone—Transdermal
- What are the dietary effects of a Paleolithic Diet? Good proteins such as meat, fish, poultry and eggs increases: GH, Cortisol, DHEA, E2, P4 and testosterone, however, bad proteins, i.e., milk products, decrease the aforementioned hormones.
- Saturated fats do what? Increase GH, Cortisol, DHEA, E2, P4 and testosterone.
- What's the net effect of Hormone TX on other hormones?
 - Melatonin
 - Increases: GH, Thyroid, IGF-1 and insulin
 - Decreases: Cortisol, E2, P4 and Testosterone
 - DHEA Increases: GH, Thyroid, IGF-1, Insulin, E2 and Testosterone
 - GH Increases: Melatonin, Thyroid, IGF-1, E2, P4 and Testosterone and Decreases: Cortisol
 - IGF-1 Increases: GH, Thyroid, Insulin, E2, P4 and Testosterone
 - T3/T4 Increases: GH, IGF-1, Insulin, E2, P4 and DHEA and Decreases: Melatonin
 - Insulin Increases: Thyroid, IGF-1, E2, P4 and Testosterone
 - Estradiol (E2) Increases: Melatonin, OH, IGF-1, Insulin and P4
 - Testosterone Increases: GH, Thyroid, Cortisol, DHEA, igf-1 and Insulin
 - Progesterone (P4) Increases: GH and IGF-1
- Progesterone can decrease the levels of what in both males and females? Estradiol (E2)
- What are the sliding effects of hormones?
 - Pregnenolone & Progesterone—Low P4 causes decreased pregnenolone, which increases short term memory loss, therefore,

increasing P4 & Pregnenolone causes pregnenolone to stay as pregnenolone, short term memory comes back.

- P4 & Testosterone—some patients taking P4 causes an elevation of testosterone causing acne in females.
- Testosterone & Estradiol (E2)—patients with low Zinc increase Estradiol (E2) when taking testosterone.
- DHEA & Testosterone-
 - If the patient has a low DHEA: give DHEA, which will increase both DHEA and Testosterone
 - If the patient has elevated testosterone and low DHEA: give DHEA, which will increase both DHEA and Testosterone; 3. If too much DHEA is given: DHEA will increase and Testosterone will decrease.
- P4 & E2—if small amounts of P4 are given, E2 stays OK; if too much P4 is given, E2 decreases
- What is a poor man's thyroid test? Basal Metabolic temperature for 10 days
- What is hormonal tension? Some hormones affect other hormones in the same category, .i.e., if we give Estriol (E3) only Estradiol (E2) increases.
- What are signs of hormonal deficiencies?
 - Melatonin—lack of sleep—TX: 0.5 mg to 5 mg SL AVOID: nicotine, caffeine, and alcohol.
 - GH—sagging face—DC: L-Arginine 2,000 mg and L-Glutamine 2,000 mg PO with dinner have them fast for 12 hours and sleep 8 hours during the 12hours of fasting—this will increase GH by 700%, depending on how low the levels are.
 - Additional Signs of Hormonal Deficiencies

Complaints	Physical Signs
ENT Infections Weight Gain/Obesity Fatigue	Puffy
Brittle Nail Growth	Overweight
Intolerance to Cold Dry Hair	Dry thick brittle hair
Dry Skin	Diffuse hair loss
Headaches	Loss of outer 1/3 of eyebrow
Bloated Abdomen Tinnitus	Swollen eyelids, lips, tongue
Constipation	Abnormal sized thyroid (goiter)
Morning Hoarseness	Dry, rough, scaly skin
Muscle Joint Pain/Stiffness	Cold, swollen hands
Slowness/Sluggishness	Yellow palms
Apathy Dyspnea	Thick swollen calves
	Non-pitting edema of LE's
Morning Depression	Cold flat feet
Slow Thinking	Yellow soles
Easily Distracted	Bradycardia
Poor Concentration	Sluggish deep tendon reflexes
Poor Attention	
Poor Memory	

Lab Tests	Optimal Values
TSH	1
Free T3	3
Free T4	1.5
ATG	0
ATPO	0
TSI	0
Thyroglobulin	<10

2 types of TX for hypothyroidism: i. T3 10-75 mcg QID (fast onset and short duration-3-4 h) and ii. T3 SR 50-300 mcg QD or BID (slower onset and longer duration 1-8 h)

**NOTE: T4 has slower onset to activity, up to 10 days, it is less effective than medication containing T3. **

BEST OPTION: Desiccated thyroid (Nature's Thyroid) 1/4 grain to 5 grain tabs. FDA Guidelines: 38 mcg T4 9 mcg T3 allow 9 mcg slide; Nature's Thyroid only 2 mcg slide.

HOW TO SWITCH: 100 mcg T4 =1 grain Nature's Thyroid

Strong thyroid stimulators are: GH, IGF-1, and TEST

Mild thyroid stimulators are: DHEA, Androstenedione, and Progesterone

Strong thyroid inhibitors are: oral Estrogens and Cortisol at high doses

Mild thyroid inhibitors are: Transdermal estrogens and cortisol at physiological doses

What conditions can increase the need for thyroids? Winter, high altitude, high physical activity, high protein diet, low caloric diet, low veggies, oral vitamin E, lack of sleep.

What conditions can decrease the need for thyroids? Summer, living near the sea, low stress, high veggie diet, low protein diet, high caloric intake, untreated cortisol deficiency, testosterone in females, GH and insulin.

d. What's seen in someone with cortisol deficiency as a child? Thin, narrow body, high ENT infections, GI troubles, difficulty eating, high attraction to sugar.

Complaints of Cortisol Deficiency	Physical Signs of Cortisol Deficiency
Anxiety	Thin
Depression	Obese if sugar is craved
Moodiness	Hair loss w/ elongated hair root
Stressful situations	Brownish face
Decreased memory during stress	Hollow cheeks
Excessive sensitivity	Painful sinus
Feeling of being a victim	Enflamed/Red ENT
Paranoid	Swollen abdomen
Emotional	Brown elbow, armpit, hand folds
Yelling	Wet hands and feet
	May have high temp during follicular phase
	Wheezing if asthmatic
	Tachycardia
	Hypotension
	Painful muscle and joints
	Painful spleen upon palpation
	Sluggish deep tendon reflexes

Hydrocortisone Replacement	
Sedentary	High Stress
Female: 15 mg-40 mg QD	1.5-3x the normal dose
Male: 20 mg-60 mg QD	
Divided over 2-4 per day	

**NOTE: With Cortisol TX ALWAYS make sure the patient has appropriate anabolics on board. **

****NOTE:** Naturally increase cortisol, increase light, small frequent meals, Paleolithic diet, avoid stress. ******

Strong stimulators of cortisol: Test, DHT, Anabolics, mild thyroid

Strong suppressors of cortisol: GH, high thyroid and melatonin

Mild suppressors of cortisol: oral estrogens, DHEA and fludrocortisones

****REMEMBER:** USE HIGH DOSAGES UNDER STRESSFUL CONDITIONS AND LOW DOSAGES UNDER UNSTRESSFUL CONDITIONS!!!

****IN THE EVENT OF AN OVERDOSE: DECREASE THE DOSE BUT DO NOT ELIMINATE****

****REMEMBER:** Cortisol partially blocks the conversion of T4 to T3

****TROUBLESHOOTING:**

- Swollen face (all day and night) - Too much cortisol
- Swollen hands and feet—High salt intake
- Puffy face only in the morning—Possible thyroid deficiency
- Too much cortisol—Ovary is agitated, insomnia, bruising, thin skin
- High sugar will decrease cortisol production
- GI problems may occur while on therapy due to decrease mucosal production
- Low B/P may occur while on therapy due to changes in aldosterone