

TEST NAME	RESULTS 10/18/18	RANGE
Urinary Creatinine		
Creatinine	0.89	0.3-2.0 mg/mL (1st morning)
Creatinine	0.88	0.3-2.0 mg/mL (2nd morning)
Creatinine	0.30	0.3-2.0 mg/mL (Evening)
Creatinine	0.48	0.3-2.0 mg/mL (Night)

<dL = Less than the detectable limit of the lab. N/A = Not applicable; 1 or more values used in this calculation is less than the detectable limit. H = High. L = Low.

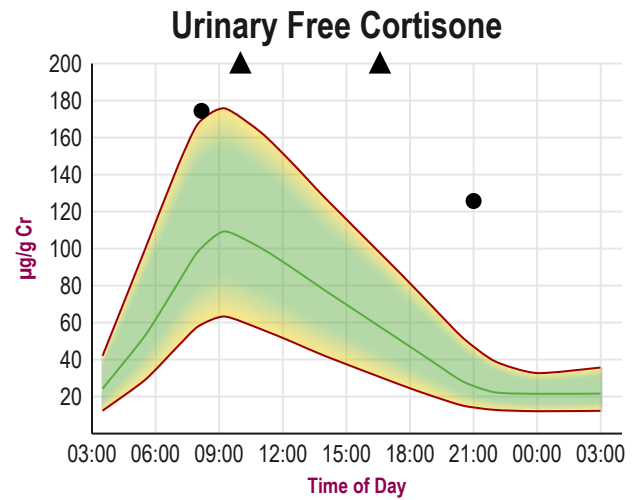
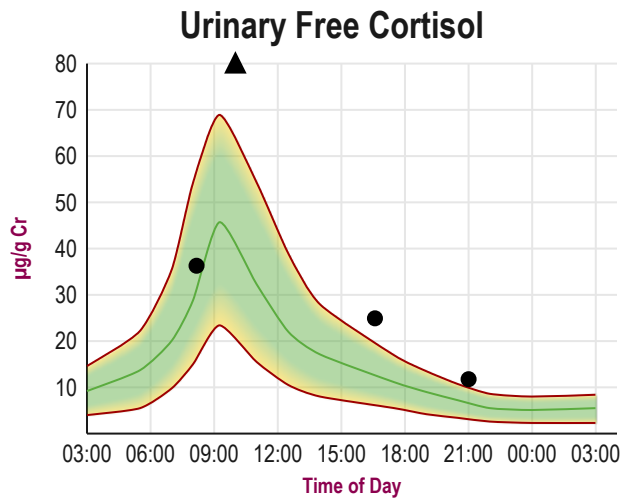
Therapies

None Indicated

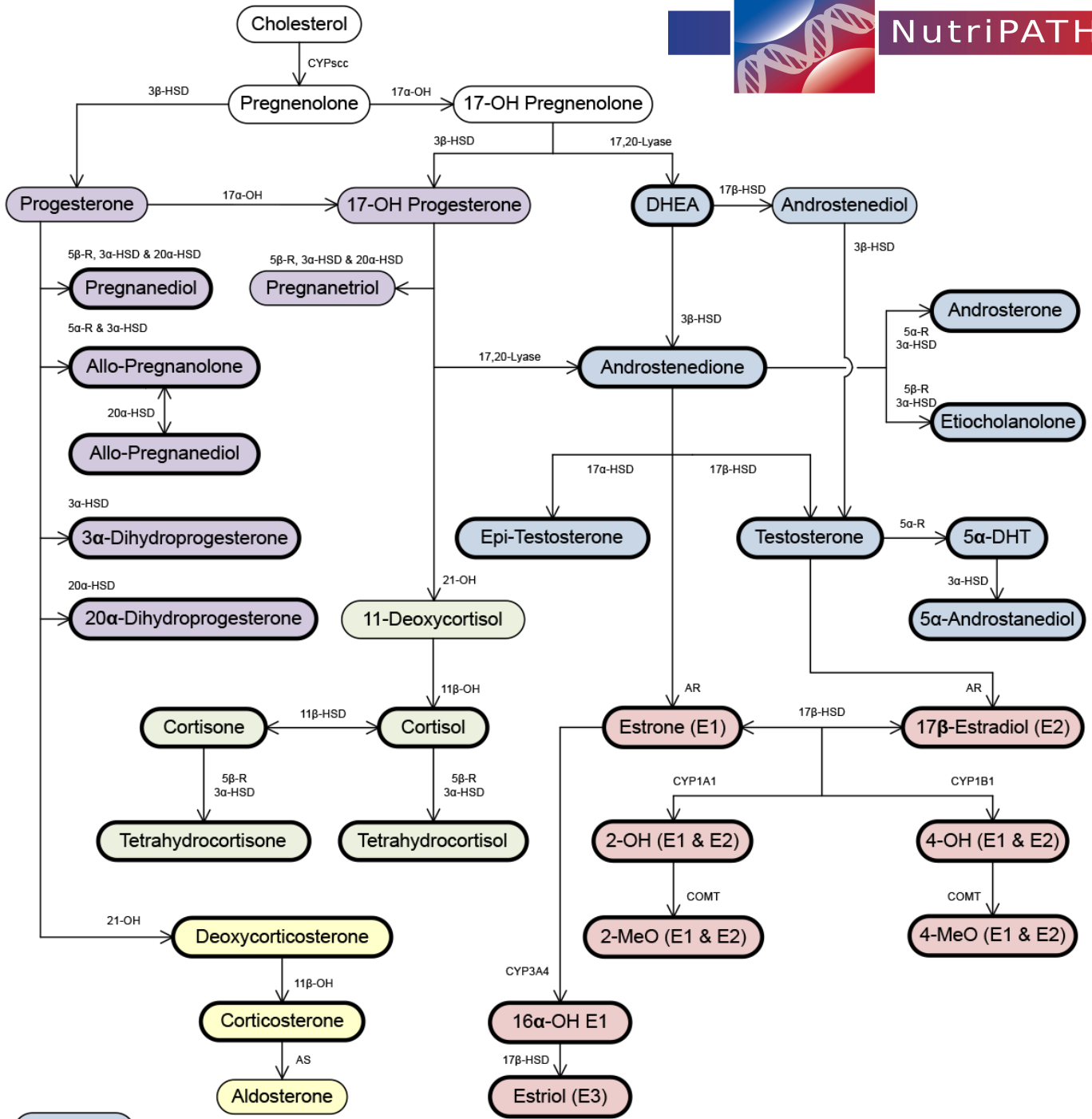
Graphs

Disclaimer: Graphs below represent averages for healthy individuals not using hormones. Supplementation ranges may be higher. Please see supplementation ranges and lab comments if results are higher or lower than expected.

— Average ▼▲ Off Graph



The Steroid Hormone Cascade



- Androgens
- Estrogens
- Glucocorticoids
- Mineralocorticoids
- Progestogens

Enzyme Abbreviations	
(5α-R) 5α-Reductase	(11β-HSD) 11β-Hydroxysteroid dehydrogenase
(5β-R) 5β-Reductase	(17α-HSD) 17α-Hydroxysteroid dehydrogenase
(11β-OH) 11β-Hydroxylase	(17β-HSD) 17β-Hydroxysteroid dehydrogenase
(17α-OH) 17α-Hydroxylase	(20α-HSD) 20α-Hydroxysteroid dehydrogenase
17,20-Lyase (same enzyme as 17α-OH)	(AR) Aromatase
(21-OH) 21-Hydroxylase	(AS) Aldosterone Synthase
(3α-HSD) 3α-Hydroxysteroid dehydrogenase	(CYP) Cytochrome p450 (scc, 1A1, 1B1 & 3A4)
(3β-HSD) 3β-Hydroxysteroid dehydrogenase	(COMT) Catechol-O-Methyl-Transferase



SYMPTOM CATEGORIES	RESULTS 10/18/18	
Estrogen / Progesterone Deficiency	50%	<div style="width: 50%; background-color: #c00000;"></div>
Estrogen Dominance / Progesterone Deficiency	2%	<div style="width: 2%; background-color: #008000;"></div>
Low Androgens (DHEA/Testosterone)	32%	<div style="width: 32%; background-color: #c00000;"></div>
High Androgens (DHEA/Testosterone)	27%	<div style="width: 27%; background-color: #c00000;"></div>
Low Cortisol	49%	<div style="width: 49%; background-color: #c00000;"></div>
High Cortisol	42%	<div style="width: 42%; background-color: #c00000;"></div>
Hypometabolism	40%	<div style="width: 40%; background-color: #c00000;"></div>
Metabolic Syndrome	8%	<div style="width: 8%; background-color: #008000;"></div>

SYMPTOM CHECKLIST	MILD	MODERATE	SEVERE
Acne	<input type="checkbox"/>		
Aggressive Behavior	<input type="checkbox"/>		
Allergies	<input type="checkbox"/>		
Anxious	<input type="checkbox"/>		
Apathy	<input type="checkbox"/>		
Blood Pressure High	<input type="checkbox"/>		
Blood Pressure Low	<input type="checkbox"/>		
Blood Sugar Low	<input type="checkbox"/>		
Body Temperature Cold	<input type="checkbox"/>		
Bone Loss	<input type="checkbox"/>		
Burned Out Feeling	<input type="checkbox"/>		
Chemical Sensitivity	<input type="checkbox"/>		
Cholesterol High	<input type="checkbox"/>		
Constipation	<input type="checkbox"/>		
Depressed	<input type="checkbox"/>		
Dizzy Spells	<input type="checkbox"/>		
Erections Decreased	<input type="checkbox"/>		
Fatigue - Evening	<input type="checkbox"/>		
Fatigue - Mental	<input type="checkbox"/>		
Fatigue - Morning	<input type="checkbox"/>		
Flexibility Decreased	<input type="checkbox"/>		
Forgetfulness	<input type="checkbox"/>		
Goiter	<input type="checkbox"/>		
Hair - Dry or Brittle	<input type="checkbox"/>		
Hair or Skin Oily	<input type="checkbox"/>		
Headaches	<input type="checkbox"/>		
Hearing Loss	<input type="checkbox"/>		
Heart Palpitations	<input type="checkbox"/>		
Hoarseness	<input type="checkbox"/>		
Hot Flashes	<input type="checkbox"/>		
Infertility	<input type="checkbox"/>		
Irritable	<input type="checkbox"/>		
Joint Pain	<input type="checkbox"/>		
Libido Decreased	<input type="checkbox"/>		
Mental Sharpness Decreased	<input type="checkbox"/>		
Muscle Size Decreased	<input type="checkbox"/>		
Muscle Soreness	<input type="checkbox"/>		
Nails Breaking or Brittle	<input type="checkbox"/>		
Neck or Back Pain	<input type="checkbox"/>		
Nervous	<input type="checkbox"/>		
Night Sweats	<input type="checkbox"/>		

elevated cortisol, as are the diseases of aging such as diabetes, cardiovascular disease, cancer, and bone loss. When cortisol remains high these symptoms/conditions/syndromes/diseases progressively become more problematic over time.

For additional information about strategies for supporting adrenal health and reducing stress(ors), the following books are worth reading: "Adrenal Fatigue", by James L. Wilson, N.D., D.C., Ph.D.; "The Cortisol Connection", by Shawn Talbott, Ph.D.; "The End of Stress As We Know It" by Bruce McEwen; "Awakening Athena" by Kenna Stephenson, MD.

URINARY FREE CORTISOL (F) AND CORTISONE (E)

Urinary free cortisol (F) and cortisone (E) are following a normal circadian rhythm but are higher than the normal reference ranges throughout the day. High levels of both F and E are caused by excessive stress(ors), the most common of which include psychological stressors (emotional), physical insults (surgery, injury, diseases such as cancer), chemical exposure (environmental pollutants, excessive medications), hypoglycemia (low blood sugar), and pathogenic infections (bacterial, viral, fungal).

While increased cortisol synthesis is a normal response to acute stressors, levels return to normal when the stressor is removed. However, persistent stressors and chronic high cortisol production by the adrenal glands over a prolonged period of time (months/years) can lead to dysfunction in most endocrine systems (sex-hormones, thyroid, and growth hormone are diminished) which leads to excessive breakdown of normal tissues (muscle wasting, thinning of skin, bone loss) and immune suppression. High cortisol also leads to insulin resistance and elevated blood sugar, a prelude to diabetes. High cortisol, particularly if it is elevated at night, is associated most commonly with symptoms and conditions such as sleep disturbances, vasomotor symptoms (hot flashes and night sweats despite normal or high estrogen levels-mostly seen in women, but also in men with low androgens), fatigue, depression, weight gain in the waist, bone and muscle loss. Excessive cortisol may also decrease the hypothalamic-pituitary response to TSH production as well as thyroid hormone synthesis in the thyroid gland. High cortisol also interferes with T4 to T3 conversion by thyroid deiodinases within target tissues, and action of thyroid hormone (T3) with the thyroid receptor (excess cortisol down-regulates thyroid receptors) at the target tissue level.

As seen in these results, cortisone is also higher than reference ranges throughout the day, indicating very high cortisol synthesis (cortisone + cortisol). Cortisol is converted to the inactive form, cortisone, by the enzyme 11-beta hydroxysteroid dehydrogenase type II (11-beta HSD-II) (for review see: Seckl JR and Chapman KE Eur J Biochem 249, 361-364, 1997). This enzyme is expressed at high levels in tissues such as the kidneys, liver, lungs, colon, adipose tissue, and salivary glands where it plays an important role in preventing excess buildup of cortisol in tissues. If cortisol is allowed to accumulate to high levels in tissues it will activate the mineralocorticoid receptor (at normal levels cortisol only activates the glucocorticoid receptors) and can lead to mineralocorticoid excess syndrome, causing high blood pressure and low potassium levels.

The activity of 11-beta HSD-II is increased with growth hormone, estrogens, and androgens. Estrogen replacement therapy in women or androgen (testosterone) replacement therapy in men will increase the activity of 11-beta HSD-II and accelerate conversion of cortisol to cortisone. This is why higher physiological levels of estrogens and androgens seen during younger years are associated with a smaller waist circumference (visceral or belly fat) and with menopause and andropause these sex-hormones diminish and waistlines (belly fat) thicken.

Because chronic stressors and associated high night cortisol can have adverse effects on health and wellbeing, it is important to develop strategies to identify and eliminate or reduce the stressors or consider bioidentical hormone replacement therapies, foods, and/or nutritional supplements that help control excessive accumulation of cortisol. For additional information about adrenal dysfunction and strategies for adrenal support and lowering stress/cortisol levels the following books and journal articles are worth reading: "The Role of Stress and the HPA Axis in Chronic Disease Management" by Thomas Guillems, PhD; "Adrenal Fatigue," by James L. Wilson, N.D., D.C., Ph.D.; "The Cortisol Connection," by Shawn Talbott, Ph.D.; "The End of Stress As We Know It," by Bruce McEwen.

Creatinine is within range throughout the day reflecting normal concentration of urine.