TEST REPORT

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ZRT LABORATORY

 # 2019 08 16 001 Se

Ordering Provider:
Dr Getuwell

Samples Received
08/16/2019

Report Date
08/18/2019

Samples Collected
Serum - 08/12/19 08:00

Patient Name: Female Serum Hormones Advanced
Patient Phone Number: 555 555 5555

Gender	Last Menses	Height	Waist
Female	07/21/2019	5 ft 8 in	30 in
DOB	**Menses Status**	**Weight**	**BMI**
7/1/1970 (49 yrs)	Pre-Menopausal - Irregular	155 lb	23.6

TEST NAME	RESULTS | 08/12/19	RANGE
Serum Steroids/Peptides		
Estradiol	120	43-180 pg/mL Premeno-luteal or ERT
Progesterone	5	3.3-22.5 ng/mL Premeno-luteal or PgRT
Ratio: Pg/E2	42 L	Pg/E2 (optimal 100-500)
Testosterone	40	20-130 ng/dL Premeno-luteal or TRT
DHEAS	110	40-290 µg/dL
Cortisol	12.3	8.5-19.8 µg/dL (morning), 3.3-8.5 (eve/night)
SHBG	95	15-120 nmol/L
Serum Thyroids		
Free T4	0.8	0.7-2.5 ng/dL
Free T3	2.8	2.4-4.2 pg/mL
TSH	5 H	0.5-3.0 µU/mL
TPOab	250 H	<70 IU/mL
Serum		
LH	10	0.5-12.8 U/L Premenopausal-luteal
FSH	15 H	0.6-8.0 U/L Premenopausal-luteal
Ferritin	25	16.0-145.7 ng/mL

<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

CLIA Lic # 38D0960950
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David T. Zava, Ph.D.
Laboratory Director

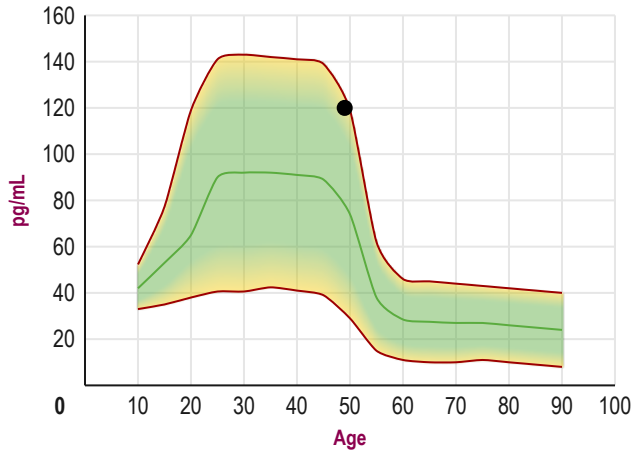
Alison McAllister, ND.
(Ordering Provider unless otherwise specified on page 1)

Graphs

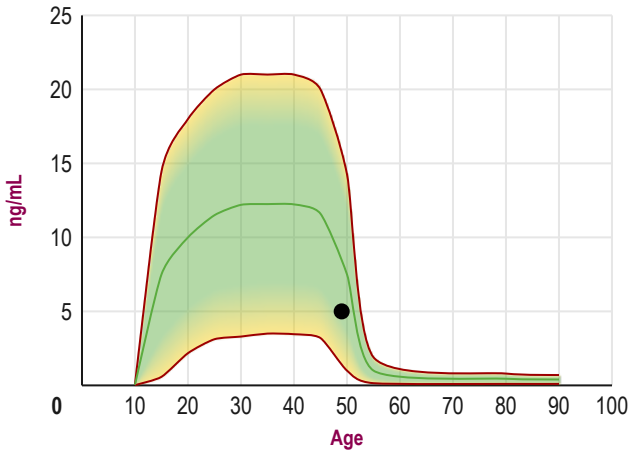
Disclaimer: Graphs below represent averages for healthy individuals not using hormones. Supplementation ranges may be higher. Please see supplementation ranges and lab comments if results are higher or lower than expected.

Average ▼▲ Off Graph

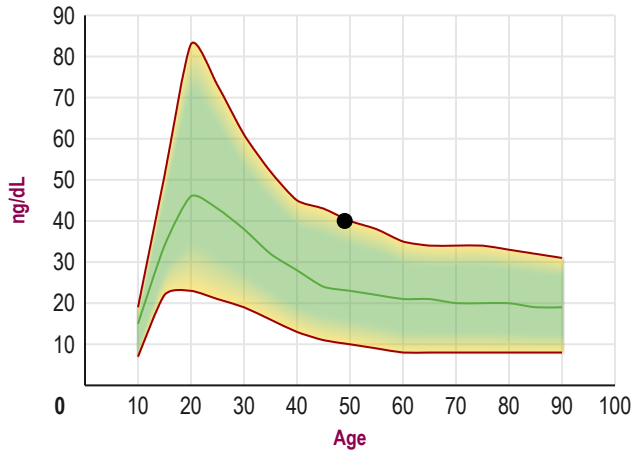
Serum Estradiol



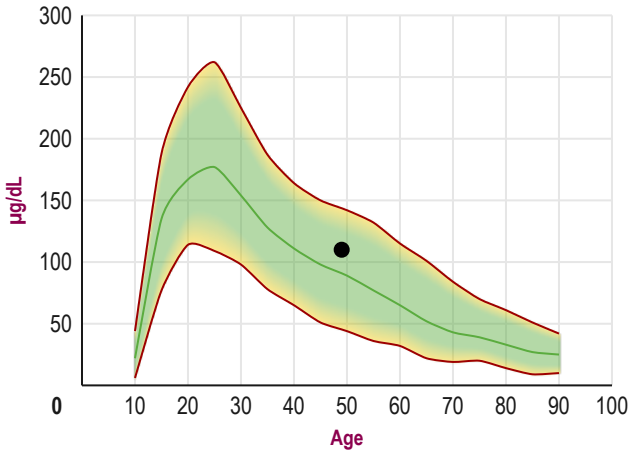
Serum Progesterone



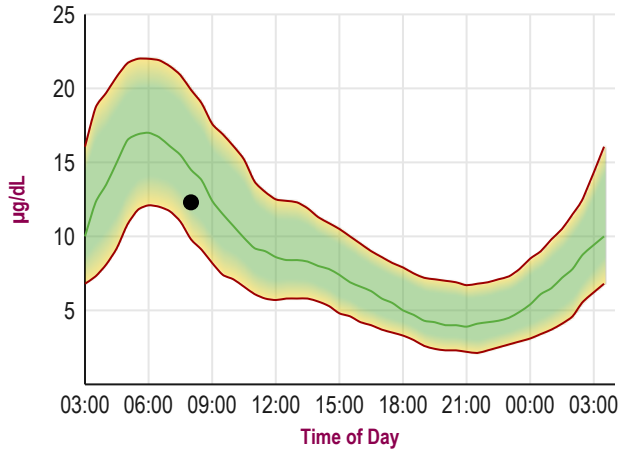
Serum Testosterone



Serum DHEAS



Serum Cortisol



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Disclaimer: Symptom Categories below show percent of symptoms self-reported by the patient compared to total available symptoms for each category. For detailed information on category breakdowns, go to www.zrtlab.com/patient-symptoms.

SYMPTOM CATEGORIES	RESULTS | 08/12/19
Estrogen / Progesterone Deficiency	17%
Estrogen Dominance / Progesterone Deficiency	45%
Low Androgens (DHEA/Testosterone)	20%
High Androgens (DHEA/Testosterone)	4%
Low Cortisol	40%
High Cortisol	25%
Hypometabolism	38%
Metabolic Syndrome	9%

SYMPTOM CHECKLIST	MILD	MODERATE	SEVERE
Aches and Pains			
Acne			
ADD/ADHD			
Addictive Behaviors			
Allergies			
Anxious			
Autism Spectrum Disorder			
Bleeding Changes			
Blood Pressure High			
Blood Pressure Low			
Blood Sugar Low			
Body Temperature Cold			
Bone Loss			
Breast Cancer			
Breasts - Fibrocystic			
Breasts - Tender			
Chemical Sensitivity			
Cholesterol High			
Constipation			
Depressed			
Developmental Delays			
Eating Disorders			
Fatigue - Evening			
Fatigue - Morning			
Fibromyalgia			
Foggy Thinking			
Goiter			
Hair - Dry or Brittle			
Hair - Increased Facial or Body			
Hair - Scalp Loss			
Headaches			
Hearing Loss			
Heart Palpitations			
Hoarseness			
Hot Flashes			
Incontinence			
Infertility			
Irritable			
Libido Decreased			
Mania			

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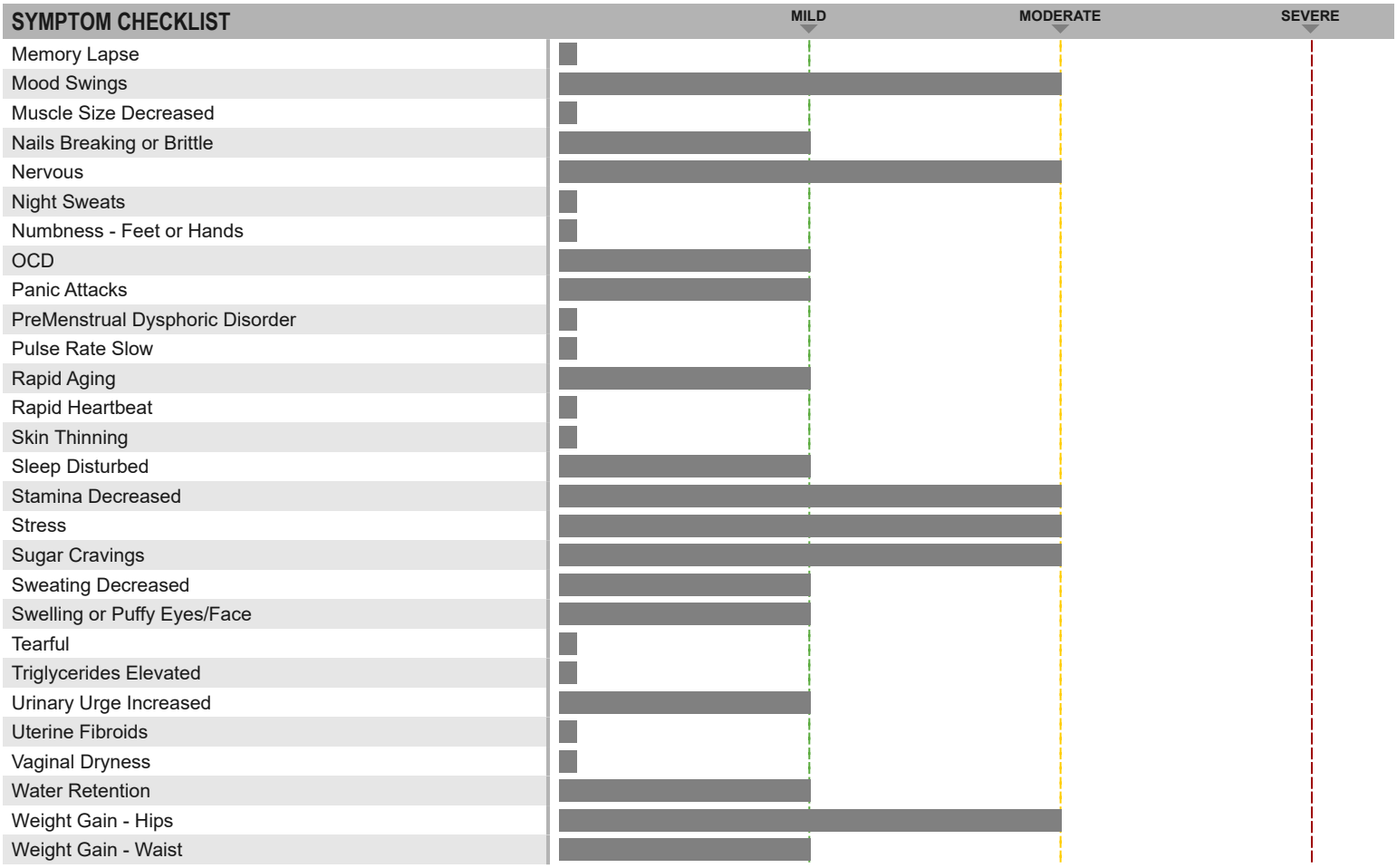

Lab Comments

Estradiol (serum) is within high-normal observed range for a premenopausal woman. This is common in women approaching menopause (perimenopause-age usually ranging from 45-56) when estradiol levels often fluctuate erratically from high to low. At this age higher estrogen often occurs in the absence of adequate progesterone, resulting in a much lower Pg/E2 ratio than seen in younger women with optimal luteal production of progesterone. A persistently low Pg/E2 ratio during the perimenopausal years may eventually lead to estrogen-dominance and a host of symptoms such as weight gain in the hips, thighs, and breasts, mood swings, and overgrowth of estrogen sensitive tissues causing formation of cysts in the breasts and overgrowth of the uterine lining associated with bleeding problems. Many of these symptoms are selfreported by this individual. Consider some of the following as a means to decrease the level of estradiol: reduce stress, gentle exercise, get restful 7-8 hr of sleep at night with minimal lighting (increases melatonin), consume a diet consisting of less red meat and more vegetables with high fiber and varied color, take herbal supplements and vitamins known to help regulate safe estrogen metabolism and clearance, and balance estradiol with natural progesterone supplementation, assuming no contraindications.

Progesterone (serum) is within the reference range for a premenopausal woman (luteal phase), but is lower than the optimal range of 10-30 ng/ml necessary to counter physiological levels of estradiol that occur during the luteal phase of the menstrual cycle (E2 levels 80-150 pg/ml). Low progesterone production by the ovaries (corpus luteum) is common as menopause approaches (peri-menopausal). If estradiol is within normal reference range, or higher, this is usually associated with a low progesterone/estradiol (Pg/E2) ratio and often results in symptoms of estrogen imbalance, both estrogen defiiciency (e.g. hot flashes and night sweats) and relative estrogen excess. If the Pg/E2 ratio is less than about 50-300, and symptoms of estrogen imbalance are reported as problematic, consider progesterone replacement therapy if not contraindicated. Testosterone (serum) is within normal range for a premenopausal woman and symptoms of androgen excess and deficiency are minimal.

Testosterone in premenopausal women is about 10-times lower than in males throughout the adult life cycle. Symptoms/signs most commonly associated with high testosterone during the premenopausal years often indicate ovarian cysts (Polycystic Ovarian Syndrome-PCOS) or late onset Congenital Adrenal Hyperplasia (CAH), the latter of which is due to elevated DHEA(S) and testosterone. When testosterone is low in premenopausal or postmenopausal women, some of the following symptoms/conditions are commonly problematic: low libido, incontinence, vaginal dryness, fatigue, memory lapses, depression, and bone loss. Low testosterone is often due to use of contraceptive hormones that lower LH and consequent ovarian testosterone synthesis, removal of one or both ovaries, and androgen-lowering therapies (e.g. chemotherapy, spironolactone, finasteride, synthetic glucocorticoids). Testosterone is an anabolic hormone essential for creating energy, maintaining optimal brain function (memory), regulating the immune system, and building and maintaining the integrity of structural tissues such as skin, muscles,

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and bone. Testosterone is also the precursor to estradiol via aromatase. In women with PCOS high testosterone is often co-associated with high estradiol and low progesterone from anovulatory cycles.

DHEAS (serum) is within mid-normal expected age range. DHEAS is highest during the late teens to early twenties (100-250 ug/dL) and drops steadily with age to the lower end of range by age 70-80. Mid-life DHEAS levels in both males and females are usually in the range of 50-150 ug/dL.

Cortisol (morning) is within the expected range but many of the self-reported symptoms indicate adrenal gland stressors, which under chronic stress situations may result in low adrenal gland output of cortisol. When cortisol levels are within normal range under situations of excessive stress this may suggest that the adrenal glands are not functioning optimally to meet the stress demands. Lower cortisol output may be due to lower levels of cortisol precursors (e.g. progesterone) or cofactors for enzymes necessary for optimal cortisol synthesis, such as vitamin C, pantothenic acid (B5), and vitamin A. Adequate protein in the diet is also necessary for optimal cortisol synthesis. Since cortisol was only tested in the morning, it is possible that levels may drop by evening, more closely reflecting the low cortisol symptoms. It is important to recognize that serum cortisol represents the total cortisol level, and not cortisol bioavailable (free) to enter tissues. Cortisol in serum is bound to Cortisol Binding Globulin (CBG), which may vary considerably amoung individuals, resulting in significant differences in bioavailable levels of cortisol. Saliva cortisol testing measures the bioavailable fraction and has been shown to correlate better with symptoms of cortisol deficiency or excess. Additional testing of the diurnal pattern of cortisol 4x throughout the day in saliva is recommended when morning serum cortisol is normal, but symptoms indicate excessive adrenal stressors. Chronic unresolved stressors (mental/emotional/physical) can initially cause overactivation of the HPA axis and high cortisol followed in time by lower cortisol and low cortisol symptoms such as fatigue, allergies (immune dysfunction), chemical sensitivities, cold body temperature (cortisol is necessary for optimal thyroid function), and sugar cravings. Adequate sleep, gentle exercise, meditation, a healthful diet, natural progesterone, adrenal gland extracts, as well as nutritional (vitamins C and B5) and botanical supplements are some of the natural ways to help support adrenal function when the level of cortisol is normal but symptoms are problematic. For additional information and for strategies to manage stress and to support adrenal health, the following books are worth reading: "Adrenal Fatigue: The 21st Century Stress Syndrome" by James L. Wilson, ND, DC, PhD; "The Cortisol Connection" by Shawn Talbott, PhD; "The End of Stress As We Know It" by Bruce McEwen, PhD . "The Role of Stress and the HPA Axis in Chronic Disease Management" by Thomas Guilliams, PhD.

SHBG (Sex Hormone Binding Globulin) is within the high-normal range. SHBG is a protein produced by the liver and released into the bloodstream in response to increasing levels of estrogens. High thyroid (T3) also increases liver synthesis of SHBG. Any form of estrogen (endogenous, synthetic estrogens such as ethinyl estradiol found in most forms of hormonal contraceptives, xeno-estrogens-DES and pollutants such as fungal mycotoxins like zeralenol, phytoestrogens like genistein found in soy products) increase SHBG levels. High insulin (insulin resistance), high androgens, and high glucocorticoids (cortisol) lower SHBG, increasing the bioavailability of estradiol and the likelihood of estrogen dominance symptoms. SHBG binds tightly to estradiol, but with an affinity about 5 times greater to testosterone, limiting the bioavailability of testosterone more than estradiol. Thus, by increasing the circulating levels of SHBG, estradiol limits the bioavailablity of testosterone more than estradiol, and thus serves as a weak anti-androgen.

Free T4 and free T3 are within low to low-normal ranges. TSH is high. This pattern low thyroid hormones and elevated TSH, in addition to selfreported symptoms, indicates clinical hypothyroidism.

Thyroid peroxidase (TPO) antibodies are also elevated indicating autoimmune thyroiditis (often referred to as Hashimoto's thyroiditis), which could explain the thyroid hormone profile seen in this individual. Thyroiditis is associated with elevated circulating antibodies to thyroid peroxidase, the enzyme found within the thyroid gland responsible for manufacturing thyroid hormones (T2, T3, and T4). These antibodies are associated with an autoimmune attack on and destruction of the thyroid gland, resulting in release of stored thyroid hormones, resulting in a hyperthyroid state. Continued autoimmune destruction of the thyroid gland eventually results in fibrosis and depletion of the thyroid hormones from the thyroid gland, thus causing an eventual hypothyroid state, as seen in these test results. Individuals with autoimmune thyroiditis may suffer from symptoms of both thyroid excess and deficiency, depending on the state of the disease (ie, autoimmune attack on the thyroid and hyperthyroidism or post-attack and hypothyroidism). Clinical studies show that selenium supplementation is helpful in decreasing autoimmune destruction of the thyroid gland (Duntas et al. Eur J Endocrinology 148: 389-393, 2003). This condition may worsen with excessive iodine therapy or under situations of stress and adrenal fatigue (low cortisol) since normal/high cortisol synthesis by the adrenal glands helps suppress the autoimmune inflammatory attack on the thyroid gland. If iodine supplements are being used or high iodine foods are being consumed consider testing urinary iodine and eliminating or reducing iodine intake to levels recommended by the WHO/FDA/AMA. Adrenal cortisol levels should be tested and if low/low-normal adrenal support should be seriously considered.

FSH and LH are slightly higher than reference ranges in premenopausal women, but lower than in postmenopausal women. Beginning with the transition to menopause (perimenopause) that occurs on average from about age 45-52, FSH and LH begin to rise in response to ovarian failure. Higher synthesis of FSH and LH often lead to excessive synthesis of estradiol in the absence of progesterone. Menstrual cycles during transition to menopause are usually irregular and the levels of FSH and ovarian estrogen production fluctuate erratically from high to low, creating symptoms of both estrogen excess and deficiency. Once menstrual cycles cease FSH and LH rise to much higher levels than seen in premenopause.

Ferritin is within the lower quadrant of the normal reference range. Lower ferritin can result from insufficient iron in the diet or other medical conditions such as excessive menstrual bleeding, internal bleeding, and anemia. Low ferritin is often associated with symptoms such as fatigue, dizziness, headaches, weakness, ringing in the ears, irritability, leg pains, and shortness of breath. Iron is essential for the actions of thyroid peroxidase in the thyroid gland, necessary for thyroid hormone synthesis. Consider consuming a diet higher in iron and iron supplementation.

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