

# Test Results

2013 11 11 \$\$\$%SB



Samples Arrived: 11/11/2013  
Date Closed: 11/14/2013

Samples Collected:  
Saliva: 10/14/13 07:00  
Saliva: 10/14/13 14:30  
Saliva: 10/14/13 21:00  
Saliva: 10/14/13 23:00  
Blood Spot: 10/14/13 07:30

John Smith MD

Ina Furtal

Menses Status: Pre-Menopausal  
Gender: Female

Last Menses: 09/25/2013  
DOB: 1/15/1985 (28 yrs) Patient Ph#: 555 555 5555

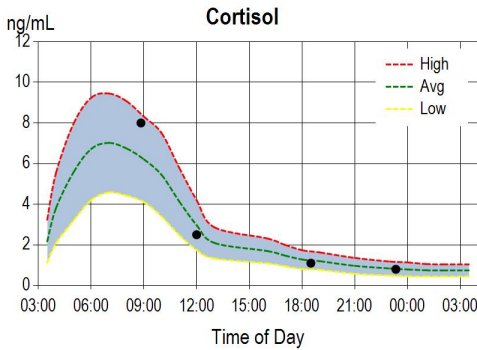
BMI: 24.1  
Height: 65 in  
Weight: 145 lb  
Waist: 32 in

Test Name	Result	Units	Range
Cortisol (saliva)	8	ng/mL	3.7-9.5 (morning)
Cortisol (saliva)	2.5	ng/mL	1.2-3.0 (noon)
Cortisol (saliva)	1.1	ng/mL	0.6-1.9 (evening)
Cortisol (saliva)	0.8	ng/mL	0.4-1.0 (night)
Estradiol (blood spot)	100	pg/mL	43-180 Premeno-luteal or ERT
Progesterone (blood spot)	0.9	L ng/mL	3.3-22.5 Premeno-luteal or PgRT
Ratio: Pg/E2 (blood spot)	9	L	Pg/E2 (bloodspot-optimal 100-500)
Testosterone (blood spot)	89	ng/dL	20-130 Premeno-luteal or TRT
DHEAS (blood spot)	125	ug/dL	40-290
SHBG (blood spot)	61	nmol/L	15-120
Free T4 (blood spot)	0.9	ng/dL	0.7-2.5
Free T3 (blood spot)	2.6	pg/mL	2.5-6.5
TSH (blood spot)	5.6	H uU/mL	0.5-3.0
TPO (blood spot)*	22	IU/mL	0-150 (70-150 borderline)
LH (blood spot)	5	U/L	0.5-12.8 Premenopausal-luteal
FSH (blood spot)	6.2	U/L	0.6-8.0 Premenopausal-luteal

\*For research purposes only.

## Therapies

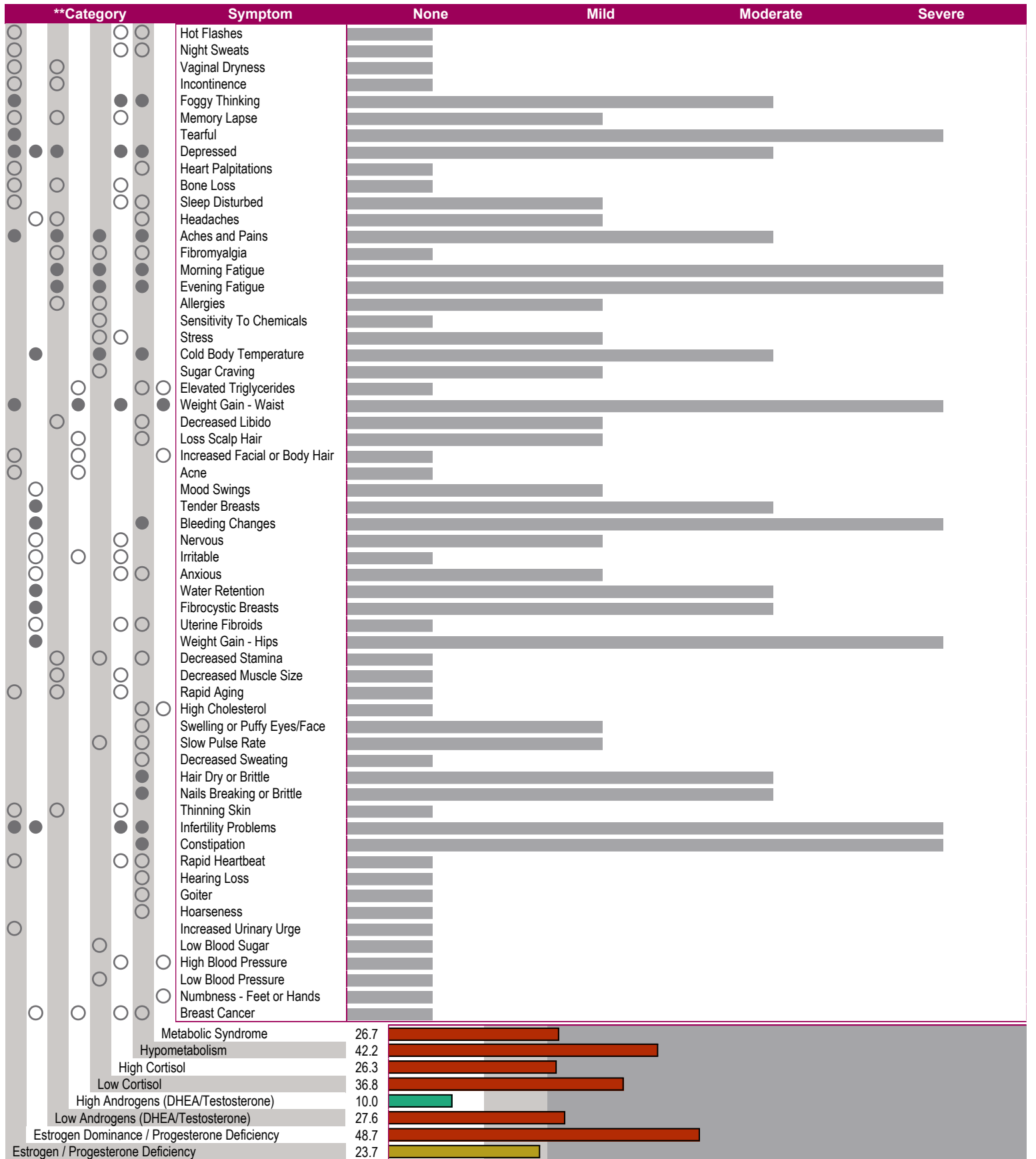
None



**ZRT Laboratory Reference Ranges**

**Disclaimer:** Supplement type and dosage are for informational purposes only and are not recommendations for treatment. For a complete listing of reference ranges, go to [www.zrtlab.com/reference-ranges](http://www.zrtlab.com/reference-ranges).

Test Name	Women
Cortisol (saliva) - ng/mL	3.7-9.5 (morning); 1.2-3.0 (noon); 0.6-1.9 (evening); 0.4-1.0 (night)
Estradiol (blood spot) - pg/mL	43-180 Premeno-luteal or ERT; <10-49 Postmenopausal
Progesterone (blood spot) - ng/mL	3.3-22.5 Premeno-luteal or PgRT; <0.1-0.8 Postmenopausal
Ratio: Pg/E2 (blood spot)	Pg/E2 (bloodspot-optimal 100-500)
Testosterone (blood spot) - ng/dL	20-130 Premeno-luteal or TRT; 10-45 Postmenopausal
DHEAS (blood spot) - ug/dL	40-290
SHBG (blood spot) - nmol/L	15-120
Free T4 (blood spot) - ng/dL	0.7-2.5
Free T3 (blood spot) - pg/mL	2.5-6.5
TSH (blood spot) - uU/mL	0.5-3.0
TPO (blood spot) - IU/mL	0-150 (70-150 borderline)
LH (blood spot) - U/L	1.6-9.3 Premenopausal-follicular; 0.5-12.8 Premenopausal-luteal; 15.0-64.0 Postmenopausal
FSH (blood spot) - U/L	2.4-9.3 Premenopausal-follicular; 0.6-8.0 Premenopausal-luteal; 31-134 Postmenopausal



\*\*Category refers to the most common symptoms experienced when specific hormone types (eg estrogens, androgens, cortisol) are out of balance, i.e., either high or low.

**Lab Comments**

Cortisol is normal throughout the day; however, a significant number of symptoms commonly associated with low and/or high cortisol are reported. Under stress situations the adrenal glands respond by increasing cortisol output. However, when cortisol levels are within normal range under situations of excessive stress, as reported herein, this suggests that the adrenal glands may be overworking to keep up with the demands of the stressors, which could eventually lead to adrenal exhaustion. Adrenal exhaustion is most commonly caused by stressors which include: psychological stress (emotional), sleep deprivation, poor diet (low protein-particularly problematic in vegetarians), nutrient deficiencies (particularly low vitamins C and B5), physical insults (surgery, injury), diseases (cancer, diabetes), chemical exposure (environmental pollutants, excessive medications), low levels of cortisol precursors (pregnenolone and progesterone) and pathogenic infections (bacteria, viruses and fungi). A normal daily output of cortisol is essential to maintain normal metabolic activity, help regulate steady state glucose levels (important for brain function and energy production), and optimize immune function. Depletion of adrenal cortisol synthesis by a chronic stressor, sleep deprivation, and/or nutrient deficiencies (particularly vitamins C and B5) often leads to symptoms such as fatigue, allergies (immune dysfunction), chemical sensitivity, cold body temp, and sugar craving. 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.

Estradiol is within the expected luteal reference range for a premenopausal woman; however, the estradiol is not well balanced with progesterone, which is lower than optimal (10-30 ng/ml) for luteal phase. This pattern is common in women who fail to ovulate (anovulatory) and those with luteal phase insufficiency (ovulate but do not produce enough progesterone to prepare the uterine lining for receiving the fertilized egg or to sustain pregnancy should this occur). Normal luteal estradiol levels without adequate progesterone often leads to symptoms of estrogen dominance, as self-reported by this individual. Unopposed estrogen (i.e. normal estradiol/low progesterone) is also commonly associated with symptoms of thyroid deficiency. When estradiol is within mid to high normal range in the luteal phase of the menstrual cycle it should be well balanced with progesterone (ideal progesterone/estradiol ratio: 100 500). Luteal insufficiency is a common cause of infertility and may result from aging (more common in women starting about age 35), excessive exposure to stressors (emotional, physical, chemical-environmental, pathogenic), other hormonal imbalances (e.g. high cortisol, low thyroid), poor diet and sleep habits, and lack of sufficient exercise. Improvement in diet and lifestyle, as well as stress reduction, and natural progesterone therapy often help treat this condition, which will increase chances for a successful pregnancy.

Testosterone (blood spot) is within normal range for a premenopausal woman. 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, and bone.

DHEAS (blood spot) is within mid-normal range.

SHBG is within normal range. The SHBG level is a relative index of overall exposure to all forms of estrogens (endogenous, pharmaceutical, xeno-estrogens). As the estrogen levels increase in the bloodstream there is a proportional increase in hepatic production of SHBG. Thyroid hormone and insulin also play a role in regulating hepatic SHBG synthesis. Thyroid hormone synergizes with estrogen to increase SHBG production while insulin, in excess (caused by insulin resistance) decreases SHBG synthesis. Thus, in individuals with thyroid deficiency and insulin resistance the SHBG level is usually low. SHBG is an important estradiol and testosterone binding globulin that help increase the half life of these hormones in the bloodstream, and also limit their bioavailability to target tissues. SHBG binds tightly to testosterone and its more potent metabolite dihydrotestosterone (DHT). It also binds tightly to estradiol, the most potent of the endogenous estrogens, but about 5 times weaker than to testosterone and DHT. Thus an increase in SHBG results in proportionately less bioavailable testosterone than estradiol.