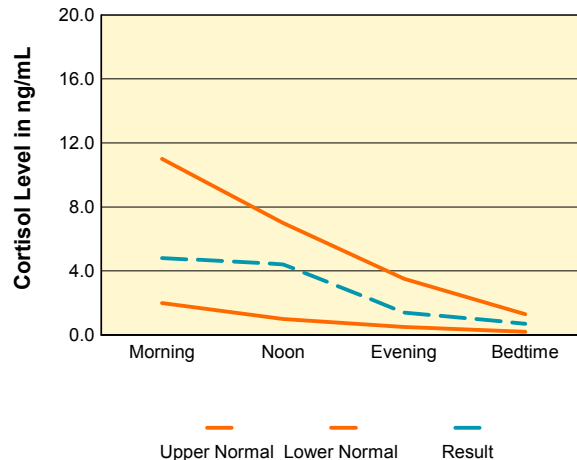


Hormone	Status	Result	Range	Units	Range Applied
DHEAS	Above range	11.7	3.0 - 11.0	ng/ml	Endogenous DHEAS 35-55 years
Cortisol AM	Within range	4.8	2.0 - 11.0	ng/ml	Sampled within 1 hour of waking
Cortisol Noon	Within range	4.4	1.0 - 7.0	ng/ml	Noon cortisol
Cortisol PM	Within range	1.4	0.5 - 3.5	ng/ml	Sampled prior to evening meal
Cortisol HS	Within range	0.7	0.2 - 1.3	ng/ml	Bedtime sample

Hormone Therapies

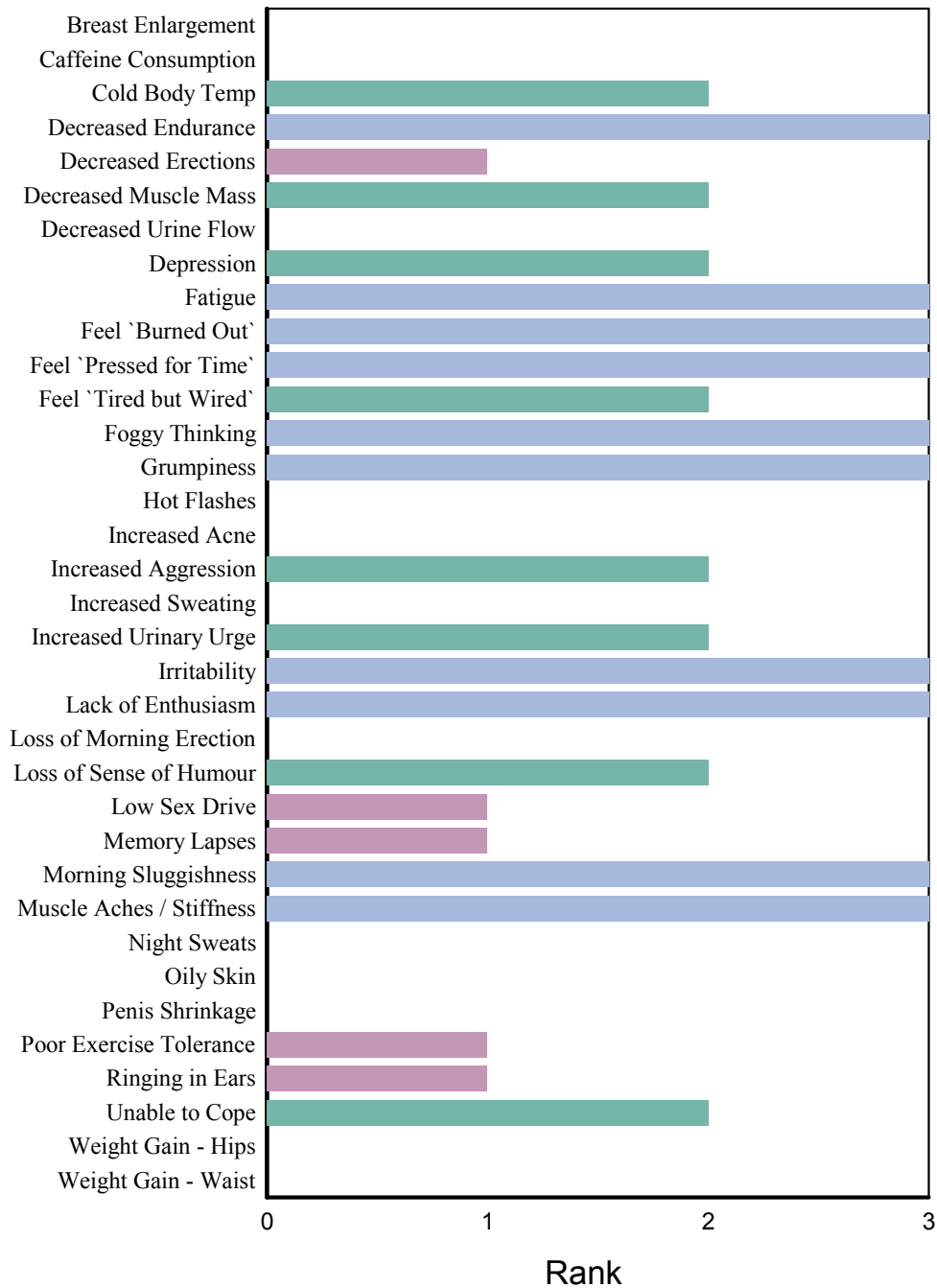
None Reported

Adrenal Function Graph



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Note: only symptoms which have been marked 0 to 3 on the requisition form are displayed above.

Symptoms of low bioavailable testosterone include fatigue, decreased sex drive, diminished quality of erections, deterioration in athletic performance, strength and endurance. Other symptoms include loss of self esteem, depression, irritability, loss of motivation and overall decreased enjoyment of life. (Tremblay R, Morales A. Canadian practice recommendations for screening, monitoring and treating men affected by andropause or partial androgen deficiency. *The Aging Male* 1998;1:213-218.) It may be worthwhile measuring testosterone on this specimen. If you wish to test other hormones on this sample, contact Rocky Mountain Analytical at (403) 241 4514. Samples are held for one month after being received at the laboratory.

Patients with a Body Mass Index (BMI) between 25 and 30 are defined as overweight and obesity is defined as BMI greater than 30. Although elevated BMI is associated with increased risk of metabolic syndrome and insulin resistance, not all patients with high BMI have metabolic abnormalities. For example, a well-muscled individual may have a BMI in excess of 30, yet still be metabolically normal. Increased waist circumference is a better predictor of these health risks, and in males, a waist circumference equal to or greater than 40 inches is worrisome. Furthermore, in males, increased waist circumference coupled with clinical signs and/or symptoms of androgen deficiency places an individual at significantly increased risk of cardiovascular disease and diabetes. Weight reduction and reduced consumption of refined carbohydrates and comprehensive nutritional intervention are worthwhile approaches for patients with elevated BMI/increased waist circumference/clinical androgen deficiency.

Tinnitus (ringing in the ears) is sometimes associated with zinc deficiency. (Yetiser et al. The role of zinc in management of tinnitus. *Auris Nasus Larynx* 2002 Oct;29:329-33.) Zinc, in turn, is an important trace element for maintaining normal testosterone levels. For example, the conformation of the testosterone/estradiol binding site on SHBG is zinc dependent. Zinc is also important for blocking the conversion of testosterone to estradiol. Growth hormone is stored in the pituitary as a dimer complexed to zinc, and zinc deficiency is associated with lowered hepatic IGF production in response to growth hormone.

Elevated DHEAS may be the result of supplementation with DHEA, pregnenolone or growth hormone/growth hormone secretagogues. As well, some adaptogenic supplements are also known to elevate DHEA/DHEAS. Supplementation with topical testosterone can also elevate DHEAS, presumably by "jamming the pipeline" connecting DHEAS to androstendione to testosterone. In men and women, elevated DHEAS levels are associated with central adiposity. Elevated DHEAS has also been noted in the brothers of women with polycystic ovarian syndrome (PCOS), and may reflect the same defect in steroidogenesis seen in women with PCOS. There may be an association between hyperinsulinemia, insulin resistance and elevated DHEAS, but the exact relationship is not clear at this time. We have also noted that some patients on antidepressants and/or antipsychotic medications also have elevated DHEAS.

Other comments aside, bear in mind that for reference, in healthy individuals less than 25 years of age, the normal range for DHEAS is 6 to 18 ng/ml for women, and slightly higher than this for men. In the absence of side effects such as irritability, oily skin and increased facial hair growth, the treating practitioner is best able to determine what, if any, action needs to be taken regarding the elevated DHEAS.

RMA database analysis (February 2008) indicates that a normal first morning cortisol sample has poor ability to predict cortisol levels throughout the rest of the day; a normal level first thing in the morning is not predictive of normal levels throughout the rest of the day. The morning point is, in a sense, "disconnected" from the rest of the day; symptoms tend to correlate much better to the

noon, supertime and bedtime cortisol levels.

All four cortisol points are within range and normal diurnal variation is exhibited.

All the cortisol points are either normal or elevated, yet the patient has symptoms commonly associated with low cortisol. Most likely the patient's symptoms are arising from some other issue such as decreased delivery of T3 to tissue, or an imbalance in brain neurotransmitters.

The ratio: A.M. Cortisol/DHEAS is 0.4. This ratio normally increases with age. Based on a large in-house analysis of more than 15,000 samples at ZRT Laboratory in Portland, the ratio at age 20 is approximately 0.6; at age 45 it is 1.0; at age 60 it is 1.5 and at age 75 it is 2.3. This is because DHEAS declines with age whereas morning cortisol stays the same or increases slightly. If the ratio is higher than expected, based on the patient's age, this may be indicative of unbalanced adrenal function (cortisol too high or DHEAS too low). Factors which can contribute to imbalance include acute or chronic stress, obesity, metabolic syndrome/diabetes, and hypothyroidism. If the ratio is lower than expected for age, and DHEAS is within normal limits, this may simply be an indicator of healthy aging (i.e. preservation of DHEA output with age); however, a lower-than-expected ratio for age may also be due to low cortisol, high DHEAS, or both.



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Medical Director

Note: The College of Physicians and Surgeons of Alberta considers saliva hormone testing and some forms of bio-identical hormone replacement to be complementary medicine. The interpretation comments have not been evaluated or approved by any regulatory body. Commentary is provided to clinicians for educational purposes and should not be interpreted as diagnostic or treatment recommendations. *General treatment suggestions can be found in the Rocky Mountain Analytical Resource Binder.