



Rocky Mountain Analytical®  
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# Male Panel

Clinical Information for Professionals

## Male Panel

The Male Panel is comprised of the following four hormones: testosterone, estradiol, DHEAS and cortisol. Interactions between these hormones are fundamental to health and, as a consequence, imbalances often result in symptoms. Progesterone levels are generally not useful in men, although men exposed to progesterone cream through skin-to-skin transfer from a partner may experience significant accumulation and testosterone deficiency symptoms may result.

### Testosterone

- ▶ Production of testosterone (T) is stimulated by luteinizing hormone (LH), the output of which is regulated via estradiol levels. If estradiol is high, LH decreases and testosterone production declines.
- ▶ Low testosterone levels may be a result of decreased hormone production or due to increased conversion of testosterone to estradiol via the aromatase enzyme system, particularly in adipose tissue.

### Estradiol

- ▶ If estradiol (E2) is high, LH decreases and testosterone production declines accordingly.
- ▶ Excess estradiol can compete with testosterone at gene promoter sites, and thus interfere with the message testosterone is trying to deliver.

### Cortisol

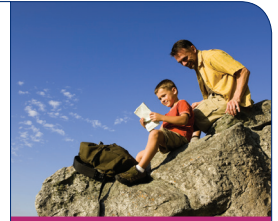
- ▶ Cortisol and testosterone deliver opposing messages to many genes. Consequently, when cortisol levels are high, men with normal testosterone levels may have symptoms of testosterone deficiency because elevated cortisol interferes with the testosterone 'message'. This results in a functional deficiency; where normal levels of testosterone are present, but the effect on gene expression is lessened.
- ▶ High cortisol can induce aromatase, which speeds the conversion of testosterone to estradiol, resulting in elevated estradiol levels.
- ▶ Excess cortisol is catabolic for bone and also opposes the action of testosterone, which is anabolic for bone. Thus, significant bone loss may occur with elevated cortisol levels.
- ▶ Over time, high cortisol levels may lead to decreased cortisol output by adrenal glands.

### Testosterone/Estradiol Ratio

- ▶ Our laboratory data shows that the ratio of testosterone to estradiol for a 20 year old man is between 20 and 40. A decrease in the T/E2 ratio is associated with an increased risk of cardiovascular disease.
- ▶ The aromatase enzyme that converts testosterone to estradiol is found in adipose fat cells. Men with central adiposity may have more aromatase activity and therefore convert more testosterone to estradiol. Excessive aromatization may result in symptoms like breast enlargement, decreased muscle mass, and emotional disturbances. Aromatization may be fueled by cortisol.

### DHEAS

- ▶ DHEA circulates in the blood mainly as its sulphate form, DHEAS.
- ▶ Cortisol and DHEAS have opposite effects on immune function and glucose metabolism.
- ▶ High cortisol levels mean more DHEAS must be released to balance effects of cortisol. Therefore, chronically elevated cortisol may result in a deficiency of DHEAS.
- ▶ Low DHEAS levels may be associated with hypothyroidism, depression, and chronic fatigue.



Cortisol  
DHEAS  
Estradiol  
Testosterone

This panel provides an overview of male hormone balance.



Hormone	Clinical Considerations	Hormone	Clinical Considerations
<b>Low Estradiol</b>	<ul style="list-style-type: none"> <li>• supplements to boost estrogen production <ul style="list-style-type: none"> <li>– boron</li> </ul> </li> <li>• periodic monitoring of bone density in the face of low estradiol may be advisable</li> <li>• <b>Note:</b> excessive lowering of cholesterol via statin drugs may result in decreased synthesis of <i>all</i> steroid hormones</li> </ul>	<b>High* Estradiol</b>	<ul style="list-style-type: none"> <li>• nutritional supplements <ul style="list-style-type: none"> <li>– zinc may slow conversion of testosterone to estradiol via aromatase</li> <li>– chrysin may decrease aromatization of testosterone to estradiol</li> <li>– calcium gluconate may increase E2 excretion</li> </ul> </li> <li>• reduce estrogen formation <ul style="list-style-type: none"> <li>– prescription aromatase inhibitors like letrozole and anastrozole decrease conversion of testosterone to estradiol (not an approved indication)</li> <li>– reduce cortisol levels, as cortisol drives aromatase expression</li> <li>– weight loss reduces aromatase activity</li> </ul> </li> <li>• optimize liver function</li> </ul>
<b>Low Testosterone</b>	<ul style="list-style-type: none"> <li>• nutritional supplements <ul style="list-style-type: none"> <li>– zinc may slow conversion of testosterone to estradiol via aromatase</li> </ul> </li> <li>• reduce cortisol levels, as cortisol induces aromatase and conversion of testosterone to estradiol</li> <li>• prescription aromatase inhibitors like letrozole and anastrozole inhibit conversion of testosterone to estradiol</li> <li>• rule out pituitary problems</li> <li>• decrease visceral fat, increase high intensity exercise, rule out sleep apnea</li> <li>• testosterone supplementation</li> </ul>	<b>High* Testosterone</b>	<ul style="list-style-type: none"> <li>• prolonged excessive testosterone supplementation may result in androgen receptor down-regulation and symptoms of testosterone deficiency</li> <li>• reduce dose of testosterone <ul style="list-style-type: none"> <li>– saliva testosterone levels are above or at high end of range and symptoms of excess (or deficiency) are present</li> </ul> </li> <li>• a significantly elevated endogenous testosterone level may require referral for an endocrine evaluation</li> </ul>
<b>Low DHEAS</b>	<ul style="list-style-type: none"> <li>• adrenal support <ul style="list-style-type: none"> <li>– adaptogenic herbs</li> </ul> </li> <li>• DHEA supplementation <ul style="list-style-type: none"> <li>– oral, SL: use minimum dose to relieve symptoms and stay within range</li> </ul> </li> <li>• may be associated with hypothyroidism</li> <li>• DHEA may be converted to estradiol and testosterone</li> </ul>	<b>High* DHEAS</b>	<ul style="list-style-type: none"> <li>• prolonged excessive DHEA supplementation may result in androgen receptor down-regulation and symptoms of androgen deficiency</li> <li>• reduce dose of DHEA</li> <li>• high DHEA/S is noted in metabolic syndrome and insulin resistance.</li> </ul>
<b>Low Cortisol</b>	<ul style="list-style-type: none"> <li>• assess diurnal cortisol via an Adrenal Function Panel or 4-pt cortisol saliva test</li> <li>• cortisol supplementation (if low cortisol confirmed in hair/urine) <ul style="list-style-type: none"> <li>– short term supplementation may be necessary in some cases (see The Safe Uses of Cortisol by William Jeffries)</li> </ul> </li> <li>• nutritional supplements <ul style="list-style-type: none"> <li>– adaptogenic herbs</li> <li>– see Adrenal Function Panel Clinical Info sheet</li> </ul> </li> </ul>	<b>High* Cortisol</b>	<ul style="list-style-type: none"> <li>• assess diurnal cortisol via an Adrenal Function Panel or 4-pt cortisol saliva test</li> <li>• nutritional supplements <ul style="list-style-type: none"> <li>– cortisol lowering supplements</li> <li>– adrenal support protocol (see Adrenal Function Panel Clinical Info Sheet)</li> </ul> </li> <li>• assess sleep: difficulty sleeping may be a result of high bedtime cortisol</li> <li>• weight loss: elevated cortisol may be associated with weight gain</li> </ul>

\* Note that high saliva hormone levels may result if a man has skin-to-skin contact with someone on transdermal hormones. For example, a man whose wife uses transdermal estradiol and/or progesterone may report a high saliva estradiol and/or progesterone level.

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