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Dr. Jason's Hormone Guide

Consult with a physician or medical healthcare provider for medical advice, diagnosis, and/or treatment. The material within this guide is for informational purposes only.

How to use this guide:

- 1) Pick the hormone that applies to you, your partner or a loved one. We can also stand to learn something here.
- 2) Read over the information to see if it resonates with what you are experiencing.
- 3) Reach out to me to discuss as needed.

Hormones covered in this guide:

A lot about these:

- 1) Testosterone
- 2) Estrogen
- 3) Cortisol

Just enough to start a conversation about these:

- 4) Prolactin
 - 5) Follicle Stimulating Hormone (FSH)
 - 6) Aldosterone
 - 7) Progesterone
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Testosterone:

- Made by the testes and adrenal glands
- Important for muscle mass, bone strength, hair growth, sexual function
- Low testosterone symptoms may manifest as: low energy, poor concentration, depression, decreased muscle mass, low libido, increased body fat, and erectile dysfunction (but this does not mean you **MUST** have low testosterone if you have these symptoms as they can be due to many other factors)
- Testosterone deficiency is the condition of having a LOW level of the hormone with ONE or more of the symptoms above**
- Affects approximately 7% of men in their 50s, and deficiency appears to increase with age
- Caused by: 1) testes don't make enough; 2) the brain is not making enough luteinizing hormone, which signals the testes to make testosterone (for women the ovaries and adrenal glands make testosterone)
- Both conditions can be due to infection, trauma, exposure to toxins such as chemotherapy or genetic conditions; chronic conditions such as diabetes, obesity, anemia, and HIV infection are also linked to low testosterone; certain medications such as opioids (narcotics), corticosteroids (such as prednisone), and anabolic steroids can lead to low testosterone
- Treatment: topical gels, self-injection, pellets under the skin
- Such treatments **MUST** be avoided in men desiring children, as they can decrease sperm production
- Side effects of treatment include: mood changes, headache, hair growth, male pattern baldness, breast tenderness and growth, acne, and decreased testicular size
- Regular tests are necessary to check levels, which can become abnormally high
- Currently there is **NOT** strong evidence that treatment leads to blood clots
- Testosterone can affect the prostate, and some men with prostate conditions should not use it

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-The relationship between testosterone and cardiovascular disease (CVD) is complex. Early studies found that treatment may be linked to stroke and heart attack, but nothing has been conclusive. What is known is that men with low testosterone are at increased risk of CVD. It is not known whether the risk is due to low testosterone or because men with low testosterone are more likely to have other medical conditions linked to CVD, such as high blood pressure, obesity and high cholesterol. Further research is indeed needed.

Estrogen

-Made by the ovaries, fat cells and adrenal glands

-Important for bone growth; also plays the primary role in the development of female secondary sex characteristics such as breasts, and wider hips. It also plays a role in blood clotting, maintaining the strength and thickness of the vaginal wall and the urethral lining, vaginal lubrication and a host of other bodily functions.

-It also helps to regulate the menstrual cycle, controlling the growth of the uterine lining during the first part of the cycle. If the woman's egg is not fertilized, estrogen levels decrease sharply and menstruation (shedding and thus bleeding) begins. If the egg is fertilized, estrogen works with another hormone, progesterone, to stop ovulation during pregnancy.

-Because of the decline in estrogen after menopause, women end up breaking down more bone than they build, and this is likely the reason why women are FOUR TIMES more likely than men to suffer from osteoporosis

-Recent research shows that low estrogen may lead to reduced mood

-Reduced levels can lead to breast tenderness, headaches (especially worsening of migraines), irregular or absent periods

-Men produce estrogen as well, but in much lower levels, and it is thought to affect sperm count. Overweight men are more commonly affected by low sperm count due to estrogen because there is more adipose (fat) tissue in the obese, which can set off the creation of excess estrogen

-Many women are found to have pain due to OVARIAN CYSTS and estrogen treatment has been found to help many of them. It can be applied in various forms, which include oral pills, a patch or the vaginal ring.

-Estrogen levels can drop for many reasons, with some being hypogonadism (decreased ovarian function) and polycystic ovarian syndrome or PCOS; extreme exercise and anorexia can also lead to decreased levels because women with low body fat may not be able to produce enough estrogen.

-Treatments: 1) Birth control (can be used to help prevent pregnancy but also for PCOS and acne, as well as menstrual cycle regulation; 2) Hormone Replacement Therapy is a treatment to reduce the symptoms of menopause (i.e. hot flashes, night sweats, anxiety, sleeping problems and vaginal atrophy (thinning, drying and inflammation of the vaginal walls)

-Side effects: may cause an increased risk of injury as some research has pointed to increased rates of ligament injuries in women with elevated estrogen; some breast cancers are sensitive to estrogen, which means that the hormone may promote tumor growth; research has also shown increased rates of stroke, breast cancer, and blood clots while using estrogen treatment

-Only women with a severe risk of osteoporosis who cannot take non-estrogen therapies should be considered for using hormone replacement therapy

-**Natural estrogen boosters: flax seeds, soy, fruits, nuts, Red wine**

Cortisol

-Made in the adrenal gland

-A steroid based hormone that helps regulate metabolism; Cortisol increases in response to STRESS

-The amount of Cortisol in your body is driven by the amount of stress you are experiencing; things like caffeine, eating patterns, the amount of physical activity you get and sleep patterns all affect how much Cortisol is released

-As a general rule, your highest level of Cortisol occurs just after you get up in the morning and the lowest level is in the evening as you are falling asleep – hence, if you are having trouble falling asleep it may be due (very likely) to the amount of Cortisol you are producing which is likely due to the amount of STRESS you are experiencing

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- It is not necessarily a bad thing, as its main function is to save us when we are under STRESS and it does this by provoking our cells to manufacture glucose from proteins and fatty acids; it is essentially saving glucose for our brains so that we can think straight and forcing the body to use fatty acids from stored fat as energy
 - It also forces the breakdown of proteins into amino acids to help with repairing cells; it increases blood pressure, which then increases blood flow and distributes glucose and other nutrients to the cells
 - It reduces the inflammatory response as well as the overall immune response in the body
 - Cortisol is used in treatments like HYDROCORTISONE cream to control inflammatory diseases, such as rashes and allergies; also used in injectable forms to treat arthritis
 - DEFICIENCY: can result from damage to the adrenal glands and can lead to ADDISON's Disease, which leads to someone having low glucose and sodium levels in their blood, increased potassium, and they tend to lose weight; this can also cause low blood pressure and dehydration; treatment involve corticosteroid replacement therapy
 - EXCESS: CUSHING's Disease; instead of stress, the cause of this disease is either a tumor of the pituitary or adrenal gland or excess doses of glucocorticoid drugs
 - Side effects from TOO MUCH: water and salt retention, high blood pressure, swelling, muscle tissue and bone loss, deposits of excess fat in the abdomen and back of the neck and poor wound healing; may develop severe infections before showing any symptoms (due to the decreased immune response)
 - Treatment: surgical removal if a tumor is present or discontinuing use of any medications that are implicated
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Prolactin

- Secreted from the anterior pituitary gland in response to eating, mating, estrogen treatment, ovulation and nursing; it is secreted in a pulsatile fashion between these events
 - Best known for its role in enabling mammals (usually females) to produce milk
 - Dopamine, which is one of our "feel-good" hormones, inhibits the release of Prolactin, and thus keeps it from over-secreting
 - Some people secrete too much Prolactin and may need to be treated for it with medications known as Dopamine-Receptor Agonists (such as Cabergoline or Bromocriptine)
 - Levels are higher in premenopausal women (compared to those that have already gone through menopause)
 - High levels in women can lead to irregular or completely missed menstrual cycles, infertility, hot flashes, vaginal dryness, milk discharge from the breasts despite not having recently given birth, and after several years even osteoporosis (thinning and weakening of the bones); some women have high levels without any symptoms
 - High levels in men can cause galactorrhea (milk discharge from the breasts), impotence (no erection), reduced libido, and infertility
 - Thyroid issues can lead to elevated Prolactin levels and thus this is something that might have to be checked; other things that may cause an elevated level include kidney disease, trauma, and stress
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Follicle Stimulating Hormone

- Produced by the pituitary gland
- Essential to pubertal development and the function of the ovaries and testes
- Stimulates the growth of ovarian follicles in the ovary before the release of an egg from one follicle at ovulation
- It also helps with the production of estrogen; helps stimulate sperm production in men
- Lack of this hormone can cause infertility, or subfertility (not strong enough) in both men and women
- TOO MUCH: may have OVARY and TESTICULAR failure
- Levels rise naturally in women around the menopausal period, reflecting a reduction in function of the ovaries and a decline of both estrogen and progesterone production

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- Ovarian Hyperstimulation Syndrome: enlarging of the ovaries and a potentially dangerous accumulation of fluid in the abdomen, which can lead to pain in the pelvic area (this is a rare condition)
 - TOO LITTLE: poor ovarian function that can lead to failure; in this situation ovarian follicles do not grow properly and do not release an egg, thus leading to infertility; some people with this will develop Kallman's syndrome which is associated with a reduced sense of smell
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Aldosterone

- Produced in the outer section of the adrenal gland known as the cortex
 - Regulation of blood pressure mainly by acting on the kidney and the colon to increase the amount of salt (sodium) reabsorbed into the bloodstream and to increase the amount of potassium excreted in the urine; it also causes water to be reabsorbed along with sodium; this increases blood volume and therefore blood pressure
 - Controlled via the RENIN-ANGIOTENSIN-ALDOSTERONE system – no reason to cover it here
 - TOO MUCH secretion is usually due to a small BENIGN adrenal tumor; symptoms include high blood pressure, low levels of potassium and an abnormal increase in blood volume
 - TOO LITTLE secretion may lead to ADDISON'S Disease (we covered this in the Cortisol section)
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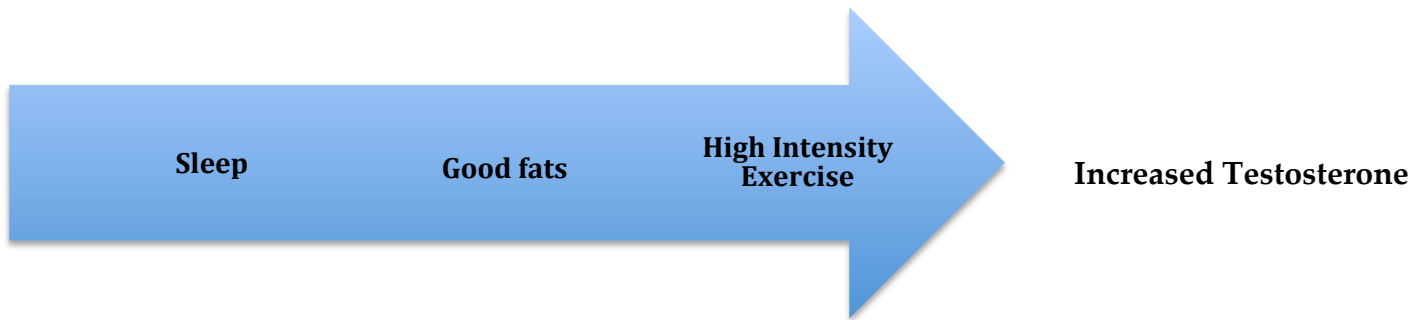
Progesterone

- Secreted by the corpus luteum, a temporary gland the female body produces after ovulation during the second half of the menstrual cycle
 - It prepares the uterus for the potential of pregnancy after ovulation; it triggers the lining to thicken to accept a fertilized egg; prohibits the muscle contractions in the uterus that would cause the body to reject an egg; while the body is producing high levels of progesterone the body will not ovulate (thus the reason some birth controls work)
 - Low levels of progesterone production can lead to abnormal menstrual cycles and may not allow women to conceive; women with low levels who do succeed in conceiving have a higher risk for miscarriage or pre-term delivery, because the hormone helps maintain the pregnancy
 - Signs of low progesterone include: abnormal uterine bleeding, irregular or missed periods, spotting and abdominal pain during pregnancy, frequent miscarriages
 - Low levels can also cause too-high levels of estrogen, which can decrease sex drive, contribute to weight gain, cause gallbladder problems, difficulty concentrating, bloating, depression, fatigue, headaches, and insomnia
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And here is something extra that I have shared in my other wellness guide:

Natural Testosterone Boosters (and women need it too!) And also, don't be sold that you have low testosterone after only one test (see below).

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Sleep: every extra hour of sleep, especially before midnight, can increase testosterone up to 15%; eating good fats and cholesterol; moderate to heavy weight lifting; sprinting and plyometrics (involves jumping and explosive exercises).

Testosterone testing, most importantly for males, can be tricky, and there are often many false positives. For starters, a physician who understands testing will ALWAYS order a repeat test if the first result is BELOW the NORMAL RANGE, as you should not be diagnosed with low testosterone after one abnormal finding. A good nights sleep is important and testing should be done during the early morning hours, typically between 600 and 800 am. There are many reasons for this, but the most evidence-based answer deals with how the body's hormones fluctuate throughout a typical 24-hour cycle. And what is even more important is that once you start treating LOW TESTOSTERONE you cannot really just stop. I have seen many male patients get started on injections, with various side effects and then try to come off of the medication. It is quite difficult and most patients thus far end up staying on the medication for life. This may likely change in the near future like most things in medicine, but for now it is best to be on the side of caution.

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