

Adrenal Fatigue

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The adrenal glands are small and hidden deep inside the body (on top of the kidneys), so they are easy to ignore. However, they are critically important for mobilizing energy to help the body respond to stress and emergencies. (The body would collapse in shock without them.) Their healthy functioning is important for blood sugar regulation (with the pancreas and liver), hormone balance, immune system function, supporting the liver's detoxification (of the normal byproducts of metabolism as well as the external toxins from our environment), and brain and emotional function, as well as "energy level".

The body, supported by its adrenal glands, is programmed to respond effectively to the stress of occasional brief emergencies. However, in modern life, stress often becomes chronic and doesn't allow the body time for rest and maintenance. Emotional stress, from the death of someone you are close to, family conflict, or work or financial stress can add up and deplete your adrenal glands, causing fatigue. Long-term pain also depletes cortisol and causes fatigue and adrenal burn out, which makes you more sensitive to the pain. Having a second or third child is often a significant added source of stress for women, a time when the long-suffering adrenal glands often "burn out" and fatigue starts.

Causes of stress in the body include:

- Emotional and situational events,
- Glycemic stress (blood sugar instability from poor diet, promoting insulin resistance and diabetes, and contributing to high blood pressure and high cholesterol),
- Chronic infections (20% of the US population may carry intestinal parasites in some studies),
- Chronic pain,
- Toxic body burden (especially in the liver and brain, from heavy metals and toxic chemicals we are exposed to every day in our food, water and air),
- Sleep deprivation.

Normally, the body does most of its rest and maintenance during sleep. Even in daytime, the body is not designed to be in emergency mode most of the time. However, chronic stress from any combination of the above can overdrive the adrenals and interfere with this repair and maintenance process, causing functional deterioration of all parts of the body, and accelerating the aging process. We cannot restore normal function to any malfunctioning organ of the body without addressing adrenal function, because every part of the body affects and is affected by every other part.

The adrenal glands have a diurnal (day-night) cycle, like the brain and other parts of the body. If this rhythm is disrupted by stress or if the adrenal hormone levels are too high or too low at any time of day, the entire body is affected. Adrenal testing (Adrenal Stress Index) measures both the levels and rhythm of Cortisol, the critical adrenal hormone, 4 times during a typical day starting from arising in the morning until going to bed at night. The test also measures the level of DHEA, an indicator of adrenal reserve as well as a precursor to the sex hormones and therefore commonly involved in hormone imbalances.

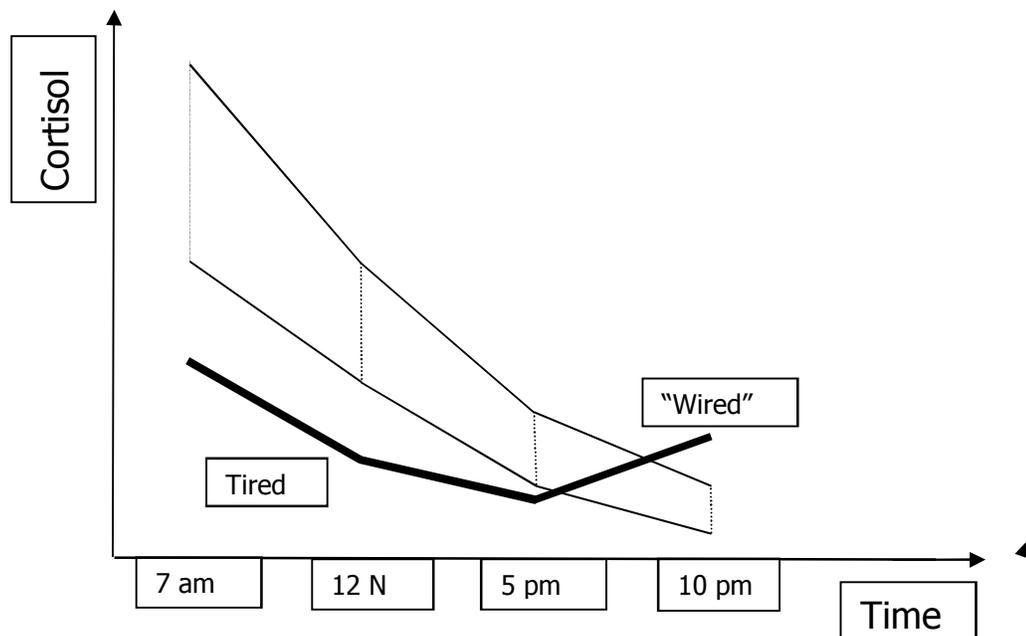
During high stress, healthy adrenal glands cope by producing an excessive amount of their stress hormones. If stress is prolonged, the adrenal function starts to deteriorate from overwork with insufficient repair (Stage I), and other organs that depend on it also begin decompensating. As this process continues with time, the adrenals are no longer able to produce more than the non-stress levels even under stressful conditions (Stage II), impairing the stress response of the rest of the body. With further deterioration, the adrenals are no longer capable of maintaining even a nonstressful level of function, and chronic fatigue occurs that is not relieved by rest and sleep (Stage III).

As the adrenal glands fail, blood sugar imbalances become worse, accelerating development of diabetes. The immune system can no longer fight as effectively, predisposing to chronic infections and autoimmune diseases and, eventually, increased vulnerability to growth of cancer cells. The liver cannot detoxify its normal load, promoting liver disease and toxic damage to the rest of the body. Brain function and mood deteriorate, contributing to anxiety and depression. Sex hormone imbalances are common (PMS, polycystic ovaries, poor sex drive, and severe menopausal hot flashes are all associated with adrenal fatigue).

An important first step in addressing many of these chronic health conditions is to assess the adrenal function by an **Adrenal Stress Index** test. Other tests may also be necessary, especially a GI test, because digestive function is so important to immune function (70% of which is centered there) and to protecting the liver from excessive toxicity that it absorbs from a malfunctioning digestive system (because the liver filters all of the blood circulation coming from the digestive tract). Effectively addressing the many interacting functions of the body to improve health status requires adequate scientific testing to determine where the important leverage points are.

After your test results are available (about 2 weeks after you have sent in your test specimens), I will meet with you again to discuss an appropriate treatment program consisting of nutritional and other components. In the meantime, I will recommend certain lifestyle changes based on your history and examination, because lifestyle issues are a critically important part of improving health status. Please contact me for any questions or concerns about your health and treatment program between visits.

Normal daily Cortisol rhythm, and an example of Adrenal Stress:
(Low energy when Cortisol is too low; "wired" when too high for time of day)



Following are some problems caused by stress-induced adrenal malfunction:

1. Weight gain:

Cortisol, the main adrenal hormone, is a "glucocorticosteroid." One of its major functions is to work with insulin to keep your blood sugar (glucose) stable. If you skip a meal, eat too much carbs at any meal in proportion to protein, eat sweets, or over-eat, your cortisol will get pushed out of balance, which can damage your metabolism. If cortisol continues out of balance, you store body fat rather than burning fat for fuel. An adrenal stress index test can help us fix your metabolism imbalances.

2. Fatigue:

The most common cause for fatigue unrelieved by normal sleep is adrenal exhaustion or adrenal burnout. This means that because of some long-term period(s) of stress (including emotional, dietary, infections, pain/inflammatory, toxic burden, and/or sleep deprivation), your cortisol production capability became depleted. Even if the stress was in the past, you could still be suffering from exhausted adrenal glands now because of inadequate repair processes (nutritional & lifestyle). An adrenal stress index test can help us fix your "persistent fatigue" problem.

3. Depression:

When the adrenal hormones cortisol and DHEA are depleted or low, depression can occur because brain function also depends on proper cortisol levels. Up and down moods throughout the day as well as irritability often reflect unstable cortisol levels (when the adrenals cannot sustain their stress response). People can feel "wired and tired" from adrenal exhaustion - amped up and even anxious at times, but also feeling burned out and down, as unstable cortisol levels bounce up and down during the day. An adrenal stress index test can often help us improve your "depression".

4. Female Hormonal Imbalances:

Cortisol, the main adrenal hormone, is made from progesterone, so making more cortisol because of stress eventually depletes your progesterone supply. The more stress you have been under, the worse the female hormone imbalances (because the body prioritizes cortisol response to the "crisis", making your progesterone levels drop suddenly when you run out of it). These sudden progesterone drops are especially a problem during premenstrual days when more progesterone is needed, resulting in "PMS" symptoms like cramping, sweet cravings, mood swings and irritability. Progesterone keeps the uterine lining intact through the second half of the menstrual cycle, so deficiencies can result in breakthrough bleeding or heavier menses, as well as irregular cycles and infertility. Perimenopausal and menopausal symptoms like hot flashes, night sweats, memory problems and mood swings are caused by sudden drops in estrogen, a hormone made from DHEA, one of the major adrenal hormones. As the adrenal glands become more exhausted, women get more-severe low-estrogen symptoms. An adrenal stress index test can help us improve your body's estrogen and progesterone hormone balances.

5. GI Problems:

The immune cells that line the digestive tract (where 70% of the immune system is located to protect your body from pathogens there) are regulated by cortisol. If the cortisol is out of balance, digestive symptoms like bloating, heartburn, constipation or diarrhea can develop. The more severe and prolonged the stress you are under, the more the cortisol response malfunctions. As cortisol is depleted, the immune system deteriorates, the digestive system starts to react poorly to foods, and there is an increased risk of picking up pathogens like H pylori bacteria (associated with ulcers, acid reflux, and gastritis), intestinal parasites (an increasing problem, occurring in up to 20% of the population in some studies), and candida or yeast (a fungus-like organism that overgrows when the immune system is weakened, which can trigger recurrent vaginal yeast infections). Often an anti-inflammatory diet and eliminating gluten (at least temporarily, or longer-term for those who are more sensitive to it), can start the process of GI healing sooner pending test results. These problems can be tested with a functional medicine GI test plus an adrenal stress index test, and then fixed by customized focused treatment.

Steroid Hormone Pathways

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