STRESS AND THE ADRENAL GLANDS

The adrenals are small endocrine glands that are located above each kidney. They secrete a number of hormones, including adrenaline, nor-adrenaline, cortisol, DHEA, and aldosterone. The output of some of these hormones varies during the day and night, called a circadian rhythm. Levels are highest in the morning to stimulate the body and lowest in the evening to allow the body to relax. Other factors, such as food choice and the timing of meals, caffeine intake, sleep patterns, and pain levels, alter hormone production as well.

The primary goal of the adrenal glands is to manage stress. They also influence sleep and mental vitality, the ability of cells to produce energy, and the growth and repair of bone, skin, and muscle. Additionally, they regulate blood sugar and insulin levels, blood pressure, mineral balance, thyroid and sex hormone levels, and immune function.

As you can see, the adrenal glands affect many processes within the body. Ensuring that these glands get the support they need is vital for health maintenance and recovery from illness.

The Problems With Stress

We are exposed to stress in many forms on a daily basis: being stuck in traffic, financial worries, hectic school schedules, high performance jobs, physical or emotional traumas, respiratory infections or other acute illnesses, poor diet choices, unstable blood sugar, lack of sleep, etc. The list goes on and on.

Stress affects our health in many ways, some obvious and others hidden. Lack of energy is probably the most common effect of chronic stress. Other physical and emotional effects are listed below. Recognizing how your body reacts to stress is the first step to managing it efficiently. This is important because, for most of us, stress significantly decreases our enjoyment of life and likely shortens our life span.

Effects of Stress On Your Body	Effects of Stress On Your Thoughts	Effects of Stress On Your Behavior
Headache	Anxiety	Overeating
Back pain	Restlessness	Undereating
Chest pain	Worrying	Angry outburst
Heart palpitations	Irritability	Drug or alcohol abuse
High blood pressure	Depression or sadness	Social withdrawal
Decreased immunity	Anger	Crying spells
Stomach upset	Lack of focus	Increased smoking
Hair loss	Forgetfulness	Relationship conflicts
Sleep problems	Feeling insecure	
Skin problems		
Increase in allergies		
Weight gain		

How The Adrenals Manage Stress

When you encounter stress, a small region of your brain called the hypothalamus (the master endocrine gland) triggers an alarm system in your body. Through a combination of nerve and hormonal signals, this system prompts your adrenal glands to release a surge of hormones, including adrenaline and cortisol.

Adrenaline increases your heart rate, elevates your blood pressure, and boosts energy production. Blood is shunted away from the digestive organs towards the muscles and the brain. This response is called "flight-or-fight". It primes your body to defend itself or to escape danger and helps to ensure survival. It is a short-lived response to stress.

Cortisol is released by the adrenal glands to allow for a more sustained response to stress. It increases glucose levels in the bloodstream and enhances brain and muscle usage of glucose as a source of fuel. Cortisol also increases the availability of building blocks used to repair the body and suppresses immune, digestive, reproductive, and growth processes. Non-essential systems are shut down in favor of enhanced thinking, movement, and energy production.

Your body's stress response system is usually self-regulated. Hormone levels decline when the perceived threat has passed and the body returns to its normal state. Your heart rate and blood pressure return to baseline levels and the suppressed systems resume their regular activities.

Adrenal Fatigue

When stress is persistent, the "fight-or-flight" system stays on. Your adrenal glands continue to release adrenaline and cortisol at high amounts and you are left feeling nervous, irritable, and on edge. Your heart rate and blood pressure remain elevated, your digestion of food suffers, the immune system is weakened, and sleep patterns are negatively affected.

It's not surprising that after long periods of chronic stress the adrenal glands get fatigued. Their ability to produce hormones suffers and your response to newly encountered stressors is less certain. You may feel unable to respond to a significant stress when necessary or you may experience a heightened response to minimal stress. Your body starts to feel worn down and the following disease states are created or exacerbated: heart disease, diabetes, obesity, depression, anxiety, insomnia, memory impairment, indigestion, fibromyalgia, thyroid imbalance, and menopause.

You may already recognize the signs of chronic stress and adrenal fatigue in yourself. If you have questions or concerns, the doctors at the Holistic Health Clinic have many diagnostic tools to confirm the presence of adrenal fatigue or assess its severity. A thorough physical exam including heart rate, seated and standing blood pressures, and pupil evaluation (the Hibbus test) is helpful. Blood work run through conventional laboratories, such as hormone levels (thyroid, DHEA, etc.), electrolytes levels (sodium, potassium), and complete blood counts, can be useful. Specialty laboratories can also evaluate salivary cortisol levels throughout the day to measure your adrenal response.

Many treatment options are available for adrenal fatigue. Please see our associated handout entitled *Stress Management* or schedule a visit for a plan tailored for your recovery.