Effects of Stress on the Body – How We Can Help Our Patients

ASAPA 2015 Primary Care Conference

The Prevalence and Magnitude of Stress

- 43% of all adults suffer stress related adverse health effects.
- 75-90% of all visits to primary care physicians are for stress-related complaints or disorders.
- Stress has been linked to all the leading causes of death: CVD, cancer, lung ailments, accidents, cirrhosis and suicide.
- An estimated 1 million workers are absent each day with stress related complaints.
- Stress is responsible for more than 25 billion workdays lost annually because of absenteeism.

1 American Institute of Stress. "America’s #1 Health Problem.
Up to 90% of all visits to primary care physicians are for stress-related complaints.


Science is pouring forth research that links chronic stress to a diversity of diseases including illnesses involving: gastrointestinal, rheumatologic, reproductive, sexual, neurologic and psychiatric systems among others. There are diverse symptomatic and physical consequences of chronic stress and the link to inflammation. We will attempt to address the underlying processes with a practical clinical approach.

Significant Sources of Stress

Personal Safety
Housing Costs
Job Stability
Personal Health Concerns
Family Health Problems
Family Responsibilities
Relationships
Economy
Work
Money
“We know today beyond question that the mind and emotions have a powerful and very real impact on the body.

The mind clearly can have a profound effect on every aspect of physiologic functioning.”

James Gordon, M.D., Director of the Center for Mind-Body Studies in Washington, DC (Hales, 2003).

Stress is usually thought of as a negative thing, however, when triggered at appropriate times, stress is certainly not a bad thing.

In fact, it can have a number of positive effects in the body as it triggers different organs in the body to take action.
Extreme, sudden stress like the loss of a loved one or a job can have near-immediate impacts on your health, but so too can lingering everyday stressors that we all juggle, particularly when they’re not dealt with over time.

This causes your body to remain in “fight or flight” mode for far too long – much longer than was ever intended from a biological standpoint.

One of the most common consequences of this scenario is that the adrenal glands, faced with excessive stress and burden, become overworked and fatigued.

This can lead to a number of related health conditions, including fatigue, autoimmune disorders, cardiac and skin problems and more.

Stress has also been linked to cancer by acting as a pathway between cancerous mutations, potentially triggering the growth of tumors.

Stress, and by proxy your emotional health, is a leading factor in virtually any disease or illness you can think of.
When our body is stressed it triggers a hormonal response in the body known as the ‘HPA (hypothalamus-pituitary-adrenal) axis’ (stress response).

Stress (whether physical or psychological) sets off neurons in the hypothalamus to release the hormone corticotrophin-releasing hormone (CRH).

CRH is then transported to the pituitary gland which then secretes another hormone, adrenocorticotropic hormone (ACTH). ACTH then stimulates the adrenal cortex (part of the adrenal gland).

This basically means that high levels of cortisol trigger the hypothalamus to reduce its output of CRH which in turn lowers the levels of ACTH and cortisol.
With increased chronicity the HPA axis may move from a state of hyperactivation to hypoactivation. There may be several contributors to hypoactivation:

- Increased feedback loop sensitivity.
- Reduced hormone biosynthesis due to organ hypofunction or depleted resources.
- Down-regulated pituitary CRH receptors causing less ACTH to be released.
- Morphological changes (adrenal atrophy).

Hans Selye’s General Adaptation Syndrome

**Stage 1: Alarm**
- A stressor is perceived by the pituitary-adrenal system and the sympathomedullary pathways are activated. Activates fight-or-flight.

**Stage 2: Resistance**
- If the stressor persists the body’s response systems maintain activation, with levels of stress-related hormones and bodily arousal remaining high.

**Stage 3: Exhaustion**
- Long periods of stress (chronic stress) eventually exhaust the body’s defense systems. This is the stage stress-related illnesses develop.

Symptoms of Adrenal Imbalance

**Blood pressure:** High or low blood pressure are signs to be aware of. Low blood pressure can often have the symptom of lightheadedness associated with it.

**Food cravings and weight changes:** Abnormal weight gain in the abdomen and thighs. Are there cravings for salty or sugary foods, sometimes feeling uncontrollable?

**Energy:** Unable to stop, always on speed forward, ongoing fatigue, lack of stamina, feeling tired and wired much of the time. Lack of get up and go.

**Emotions and coping ability:** Inability to deal with day to day stress, feeling overwhelmed much of the time, struggling to get through the day, driven, having a very “short fuse”, anxiety attacks, and/or unable to reframe ones thinking.
Symptoms of Adrenal Imbalance, Cont’d.

Thinking: Mentally foggy, fuzzy thinking, inability to stay focused on one task, chronic racing thoughts.

Immune response: Frequent infections, taking a longer time than others to recover from illness or infections or trauma.

Sleep: Inability to fall asleep or falling asleep well but waking up nightly. Sleeping soundly but waking up exhausted.

Hormones/Libido: Worsening of perimenopausal symptoms, low libido, severe PMS, Erectile Dysfunction.

Effects of Prolonged Elevated Circulating Cortisol Levels from Chronic Stress

- Impaired cognitive performance
- Dampered thyroid function
- Blood sugar imbalances, such as hyperglycemia
- Decreased bone density
- Sleep disruption
- Decreased muscle mass
- Elevated blood pressure
- Lowered immune function
- Slow wound healing

- Increased abdominal fat, which has a stronger correlation to certain health problems than fat deposited in other areas of the body.

- Some of the health problems associated with increased stomach fat are: heart attacks, strokes, higher levels of "bad" cholesterol (LDL) and lower levels of "good" cholesterol (HDL), which can lead to other health problems.*
Effects of Chronically Low Circulating Cortisol levels

- Brain fog, cloudy-headedness and mild depression
- Low thyroid function
- Blood sugar imbalances, such as hypoglycemia
- Fatigue — especially morning and mid-afternoon fatigue
- Sleep disruption
- Low blood pressure
- Lowered immune function
- Inflammation

How Do We Identify Chronic Stress In Our Patients?

Consider using an Adrenal Health Questionnaire

1. If a patient gives a history stressful events, both recent and in the past
2. If the patient appears anxious, depressed, worried
3. If the patient complains of palpitations or chest pains and is in otherwise healthy-appearing patient
4. If the patient complains of excessive fatigue, brain fog, sleeplessness, low libido, ED, weight gain

A thorough questionnaire can be found at http://www.adrenalfatigue.org/take-the-adrenal-fatigue-quiz
Body Changes with Adrenal Stress

What Tests Do I Order?

- CBC with differential
- CMP
- Lipid Panel
- HsCRP
- HbA1C
- DHEA-S
- TSH, Free T4, Free T3
- TPO, Thyroid antibodies
- Salivary Cortisol (4 times of day)
- Vitamin D 25-hydroxy
- Pregnenolone

In Females:
- Estradiol
- Progesterone
- Total Testosterone
- FSH

In Males:
- Total Estrogen
- Total & Free Testosterone
- PSA
- LH

What Is a Salivary Cortisol Test?

1. The saliva producing cells passively allow ONLY unbound steroid hormones into the salivary ducts.

2. It is this unbound hormone that exerts the activity that hormones are known for in various tissue beds throughout the body.

3. Saliva testing looks at the “unbound hormone levels” also known as “free fraction hormone levels” which are the hormone levels that are available to be used by the body’s tissues. This gives us a better idea of the levels of hormones that are actually influencing the tissues, rather than just the level of hormones that are present in the tissues.
Samples of 24-hour Cortisol Testing
Adrenal Stress Index

Optimal Serum Test Reference Ranges

- FBG 65 - 95 mg/dL
- HbA1C 3.5 - 5.1%
- total Hgb
- Total Chol. 0 - 200 mg/dL
- Triglycerides 0 - 100 mg/dL
- LDL 0 - 100 mg/dL
- HDL 50 - 200 mg/dL
- Cor. Risk Ratio 1 - 3.5
- Homocysteine 0 - 9 umol/L
- hs-CRP 0 - mg/L
- Vitamin D 60-80 ng/mL
- Random Cortisol 10-12 mcg

Testosterone 700-900 ng/dL
Free T 130-190 pg/mL
% Free T 1-2.7
DHT 25-75 ng/dL
LH 1.5-9.3 mIU/mL
Estradiol 10-40 pg/mL
DHBA 5-250-500 mcg/dL
PSA 0.4 ng/mL
TSH 0.1-2.5 mIU/L
Free T3 2.3-4.2 ng/mL
Free T4 0.8-1.8 ng/dL

How to Help These Patients

Medical History including lifestyle/habits/stressors
Physical Examination
Testing with serum and saliva tests
Determination of diagnoses
Treat with patient buy-in
Decrease stress
Lifestyle modification
Supplements/Medications as needed
Counselling
Specialist referral as needed (cardiology, endocrinology, etc)
Frequent follow-up early in the recovery stage, tapering as able
Healthy Lifestyle Changes
- Avoid caffeine, sugar, alcohol and drink 64oz water daily
- Choose organic, alkalizing whole foods
- No white foods, gluten, or sweeteners, and very little red meat
- Always eat breakfast (low carb)
- Reset your circadian rhythm
  - Good night sleep
  - See the sunrises and sunsets!
  - Turn off electronics at 9pm
- Reconnect with nature – take long hikes, 2-3x/mo at least
- Smile more
- Gratitude journal
- Meditate
- Heart Math, EMDR, EFT
- Positive verbiage/affirmations
- Deep breathing
  31) "Pause, Breathe, Smile, Connect"

Suggested Nutrients/Supplements
- Nutrients to decrease inflammation, support cell membrane integrity and function and adrenal function
- DHA (Omega 3 Fatty Acids)
- Maca
- Quercetin
- Resveratrol
- Grape Seed extract
- Turmeric
- Phosphorylated Serine
- Supplements
  - Vit D
  - Progesterone and/or Pregnenolone
  - DHEA (7-Keto-DHEA for men)