SOS

STRESS RECOVERY PROGRAM

PATIENT HANDBOOK

Introduction

Stress: Everyone experiences it at one time or another, but chronic high stress, and how that stress is perceived, can be detrimental to your physical and mental health. It can instigate feelings of anxiety and overwhelming fear. It can also weaken your immune system and overall health, leaving you susceptible to colds and flu, an increase in aches and pains, as well as many serious illnesses. Everyone's stress threshold is different, as are his or her reactions to it. Some people thrive on stress and find it positively motivating; others do not.

Outside of mental stress, additional burden can be placed on the body's stress-response system by various lifestyle factors such as consuming a refined and nutrient-depleted diet, excessive amounts caffeine or alcohol, inflammation, or not getting enough sleep.

Your health care provider has recommended the SOS Stress Recovery Program as the strategies contained will assist you in learning how to appropriately respond to stress. These tools can help you regain control of your life, allowing you to enjoy a restored, renewed and revitalized life of balance.

Stress reveals itself in many different ways. How is it affecting your life?

Are you easily overwhelmed by everyday tasks that were once a breeze?

Do you get angry over things that never used to bother you?

Are you experiencing mental fatigue or brain fog?

Have you gained weight around your mid-section?

Do you have difficulty falling or staying asleep?

Are you having trouble concentrating?

Do you crave foods you know are unhealthy for you?

Is your libido not what it once was?

Are you easily irritated on a consistent basis?

Are you restless and agitated?

Do you lack energy by the middle of the afternoon?

Are you relying on caffeine to make it through the day?

Are you drinking alcohol in order to relieve stress?

Do you have aches and pains that you never had before?

If you identify with one to two of these statements, your body's ability to adapt to stress may be impaired. If you identify with three to four of these statements, your daily stress load may be overwhelming and significantly impacting your health.

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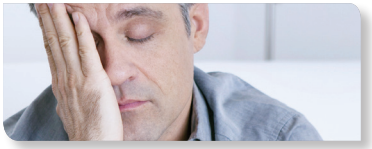

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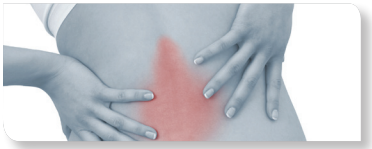

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Stress Recovery

Welcome to the SOS Stress Recovery Program. This guidebook was designed to help you bring your mind and body back into balance and eliminate the unhealthy effects of stress.

Each person's response to stress is unique and complex. The essential tools in this program are designed to be flexible as they help support each component of the stress response, allowing you to find the perfect balance that restores your vitality and optimal health.

This guide will help you better understand how stress affects your health on a daily basis; including why your body responds, or fails to respond, to the stressful events in your life. Starting with the "Life Event Stress Inventory," you will discover the life events that may be the most stressful. Additionally, each chapter outlines recommendations for the four major factors that trigger a stress response in the body: *mental and emotional stress, blood sugar imbalances, insomnia and inflammation.*

Once you understand these basic principles, you will have the tools to control your stress response, rather than be controlled by the events and circumstances around you.

Life Stress Inventory

Life Event	Points	Score
Death of a spouse	100	
Divorce	73	
Marital separation	65	
Detention in a jail or institution	63	
Death of a close family member	63	
Major personal injury or illness	53	
Marriage	50	
Being fired from work	47	
Marital reconciliation	45	
Retirement from work	45	
Major change in the health or behavior of a family member	44	
Pregnancy	40	
Sexual difficulties	39	
Gaining a new family member (birth, adoption, older adult moving in, etc.)	39	
Major business adjustment	39	
Major change in financial situation (a lot worse or better off than usual)	38	
Death of a close friend	37	
Changing to a different line of work	36	
Major change in # of arguments w/spouse on core issues	35	
Taking on a mortgage (for house, business, etc.)	31	
Foreclosure on a mortgage or loan	30	
Major change in responsibilities at work (promotion, demotion, etc.)	29	
Son or daughter leaving home (marriage, attending college, joined military)	29	
Conflict or tensions with parents/in-laws	29	
Outstanding personal achievement	28	
Spouse beginning or ceasing work outside of the home	26	
Beginning or completing formal schooling	26	
Major change in living conditions (new home remodeling, deterioration of home)	25	
Change of personal habits (dress, quitting smoking, etc)	24	
Conflict at work with employer or manager	23	
Major changes in working hours or conditions	20	
Changes in residence	20	
Changing to a new school	20	
Major change in usual type and/or amount of recreation	19	
Major change in church activity (a lot more or less than usual)	19	
Major change in social activities (clubs, movies, vising, etc.)	18	
Taking on a loan (car, TV, freezer, etc.)	17	
Major change in sleeping habits (a lot more or less than usual)	16	
Major change in number of family get-togethers	15	
Major change in eating habits	15	
Vacation	13	
Major holidays	12	
Minor violations of the law	11	

Take the Test

Use the Life Event Stress Inventory to calculate how events in your life influence the amount of stress you experience. You might be surprised to find how many stress-contributing events are part of your life. Add up all your points to findyour score.

A score of 150 points or less suggests a low amount of life change and a low susceptibility to stress-induced health breakdown.

Scores between 150 to 300 points imply about a 50 percent chance of a major health breakdown in the next two years.

A score of 300 points or more raises the odds of a major health breakdown in the next two years by about 80 percent.

Note : Risk of illness assessment. Adapted from "The Social Readjustment Scale," by T.H. Holmes and R.H. Rahe, 1967, *Journal of Psychosomatic Research, 2,* p.213. Copyright 1967 by Elsevier Science Inc.

Stress and Your Health

Your body was designed to respond to short bursts of stress, followed by long periods of rest and relaxation. In today's world, however, time to relax is considered a luxury, while stress levels are at an all-time high.

Stress is frequently referred to as "the silent killer"; it is a factor in five out of the six leading causes of death—heart disease, cancer, stroke, lower respiratory disease, and accidents. An estimated 75 to 90 percent of all doctor visits are for stress-related issues.

Initiation of the stress response begins within the brain and activates release of a series of hormones. The stress response system includes the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS). The HPA axis and the SNS regulate your body's fight-or-flight response, which is important for preparing the body to quickly respond to immediate danger, such as avoiding a car accident. The result of HPA and SNS activation is a heightened sense of awareness, an accelerated heart rate and rapid breathing. These normal responses to immediate danger help you quickly and appropriately respond to a potential threat.

Cortisol is the primary hormone involved in regulating the stress response. In response to stress, the adrenal glands secrete cortisol, along with the fight-or-flight hormone epinephrine (also known as adrenaline). These hormones travel through the bloodstream preparing the body for a quick response to potential danger. In addition to heightened awareness, you will experience an increase in blood sugar and blood pressure, as well as decreased immune defense, decreased digestion and a breakdown in muscle. Once the stressor is removed, this state of "sympathetic nervous system dominance" will subside and your body will return to a normal relaxed state.

The short-term release of cortisol and adrenaline into the bloodstream prepares the body for an essential and quick response to potential danger. Chronic stress causes a continuous release of cortisol and adrenaline into the bloodstream, which can be damaging to the body if left unresolved. Stress can also affect the thyroid gland, causing a disruption in the normal production of thyroid hormones *(See the "Stress and Thyroid" section of this handbook for additional information).*

The HPA axis coordinates stress response in the following process:

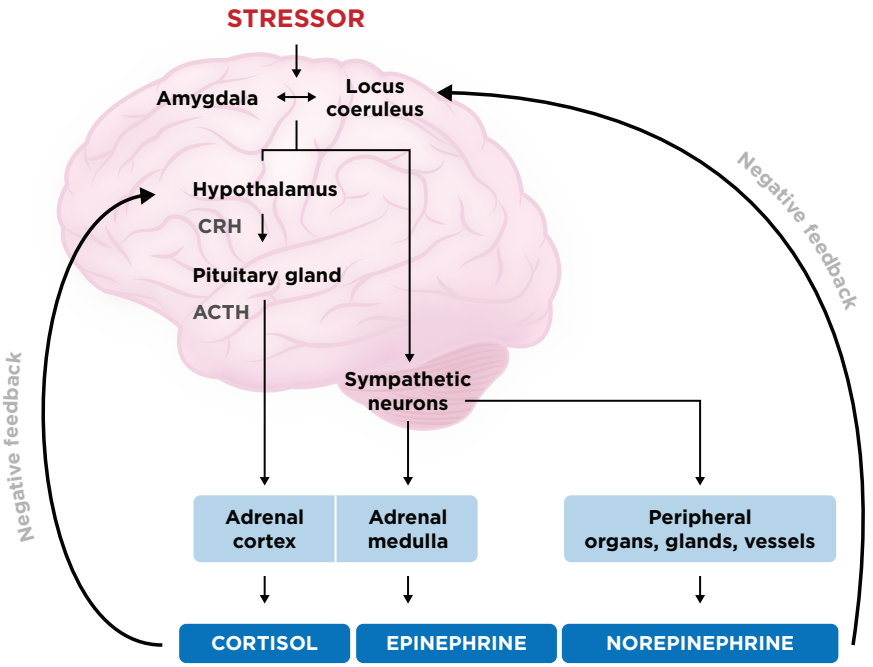
1. The brain receives a signal in order to indicate to the rest of the body that a stressor is present. (The stressor may be, mental or emotional stress, drop in blood sugar, insomnia or inflammation).

2. Stress activates the hypothalamus (a gland in the brain) which begins the stress-response process by secreting corticotropin-releasing hormone (CRH).

3. CRH stimulates the pituitary gland in the brain to release adrenocorticotropic hormone (ACTH) which travels through the blood stream until it reaches the adrenal glands.

4. ACTH causes the adrenal glands to release cortisol, resulting in: heightened awareness, increased blood sugar, rapid pulse and increased blood pressure, decreased immune defenses, decreased digestion, breakdown of bone to release calcium, and breakdown in muscle.

5. As part of the sympathetic nervous system (sympathetic neurons) response, the adrenal glands also release epinephrine (adrenaline), resulting in increased heart rate, rapid breathing, and a state of exaggerated fear and/or anxiety.



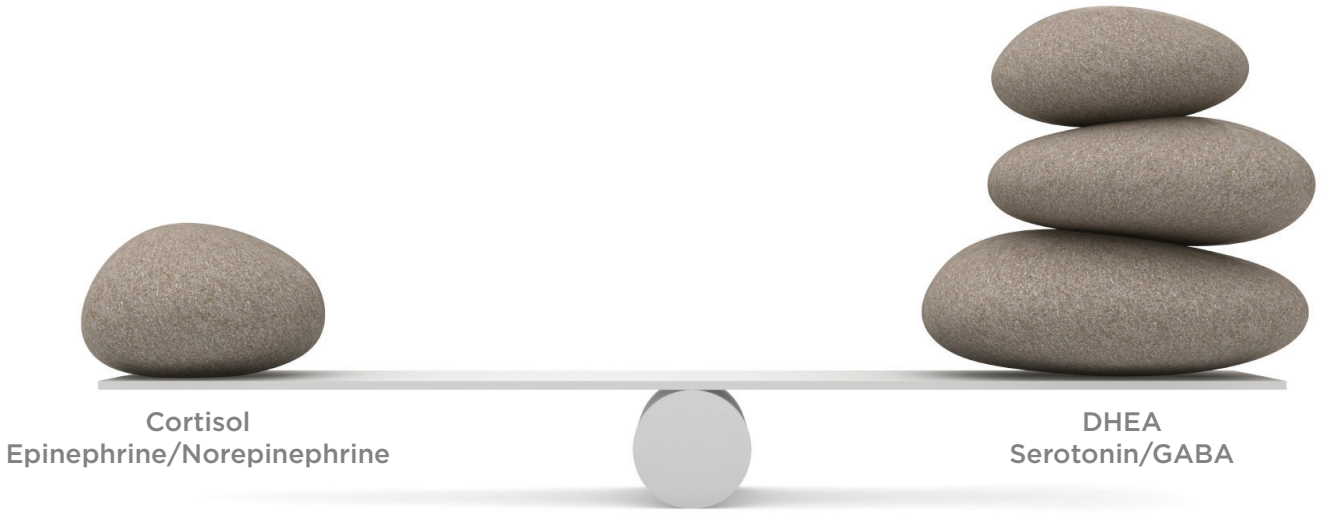
Your Body's Stress-Buffering Mechanisms

Under normal, healthy conditions, cortisol is released in response to stress and DHEA acts to counter-balance cortisol. Prolonged stress can overwhelm the HPA axis, burdening the adrenal glands and creating an imbalance in cortisol and DHEA ratios.

As the body's "stress hormone," cortisol provides the body with quick bursts of energy and has additional benefits such as reducing inflammation. DHEA is your body's anti-cortisol hormone. Without DHEA, long-term elevated cortisol levels would wreak havoc on the body. As a stress-buffering mechanism, DHEA directly binds to receptors in the brain that promote a sense of relaxation and decreased pain. DHEA also supports insulin sensitivity, maintains tissue strength and repair, boosts immune function and promotes a sense of well-being.

It is important that cortisol and DHEA levels remain in proper ratios in order to maintain the optimal balance that is required by the body.

Additional stress-buffering mechanisms include the brain chemicals (neurotransmitters) serotonin and gamma-amino butyric acid (GABA). Serotonin and GABA are chemicals that, once released from nerve cells, create a sense of positive mood and relaxation. Serotonin and GABA are important counterparts to the fight-or-flight chemicals- epinephrine and norepinephrine. Epinephrine and norepinephrine put the body in overdrive, to heighten awareness and sharpen your reflexes so you remain awake, alert and responsive. Maintaining healthy serotonin and GABA levels can help the brain put the brakes on your stress response so you can remain calm under pressure. More information regarding natural methods to boost your serotonin and GABA levels is included in Chapters 2 and 3.



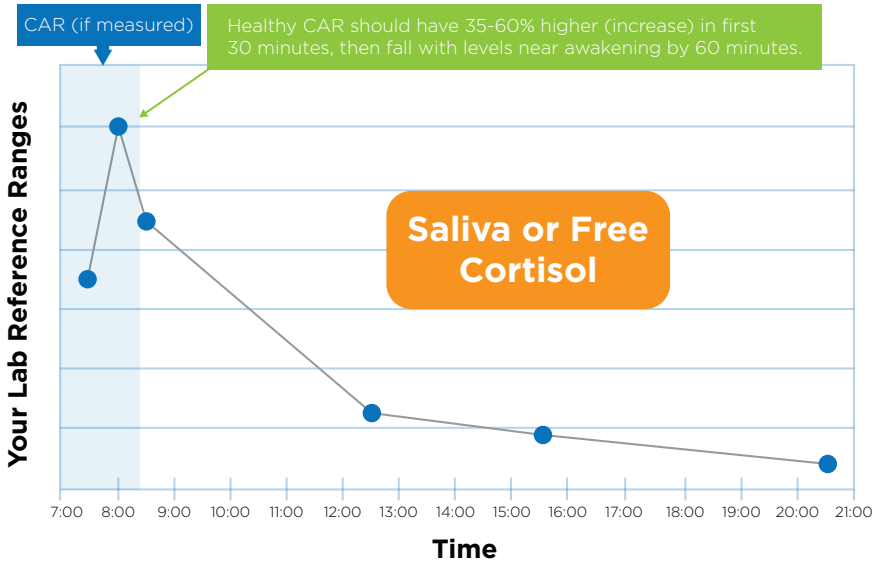
Assessing Your Stress-Response System with Lab Testing

The body's stress response is tested by monitoring cortisol levels throughout the day. A rhythm, or pattern has been determined as a "normal" circadian rhythm of activity (refer to cortisol graph below). As you can see, cortisol is the highest in the morning and levels progressively decrease as the day continues, until they are lowest as we are sleeping. To test your stress response, six samples will be submitted for the day, the first sample should be measured between 6:30 to 7:30 am. The next two samples will be collected 30 minutes and 60 minutes after the initial cortisol awakening level. Three more samples will be collected and charted in mid-to-late morning, afternoon and before bedtime.

Cortisol and DHEA levels can be a valuable tool to determine how well your body responds to stress. When cortisol is elevated, it may mean you are being exposed to an uncontrolled immediate stressor, such as mental or emotional stress, blood sugar fluctuations, sleep cycle disruption or inflammation. When cortisol is suppressed, it may reflect prolonged, or chronic stress exposure.

Your health care provider may recommend testing in order to help determine if you have an imbalance in your stress response system.

There are several methods to measure your cortisol: blood, urine or saliva. The lab may evaluate total levels of cortisol, as well as other hormones, such as DHEA, melatonin, progesterone, estrogen and testosterone. Due to the nature of hormone balance, if one hormone level is high or low, another will tend to deter from normal as well. Examining the levels of these hormones will help identify additional imbalances that may be affecting your health.



The Three Stages of HPA Dysfunction are Typically Defined as:

Stage 1: Alarm Phase (Hyper-Cortisol). Individuals in this stage usually report feeling restless, irritated, or "wired." Immediate stressful situations are causing high cortisol production, but there is inadequate signaling within the HPA axis to shut-off excessive cortisol production. An inadequate diurnal rhythm may also appear in this stage, manifesting in higher levels of cortisol at night. This stage of HPA axis imbalance, if left unchecked, can eventually affect other systems in the body, such as weakening immune response, as well as contribute to loss of sleep, anxiety, weight gain, insulin resistance and blood sugar fluctuations.

Stage 2: Resistance Phase (Cortisol-Dominant). This stage may be the result of ongoing acute adrenal dysfunction or the accumulation of years of mild stress without adequate relaxation and recuperation. Lab testing may indicate erratic patterns of cortisol production, inadequate diurnal rhythm, as well as reduced levels of DHEA.

Stage 3: Exhaustion Phase (Hypo-Cortisol). This later stage of HPA dysfunction is typically associated with a multitude of issues, including fatigue, severe insomnia, depression, hormonal imbalances, or an increase in pain and inflammatory conditions. Test results in stage three will show depleted levels of cortisol and DHEA (Addison's disease is the complete loss of cortisol production). Individuals in this stage may find even the simplest tasks have become difficult to complete.

Through a process of physical examination, health history, lifestyle and nutritional assessments, as well as lab testing, your health care professional can determine what level of stress or fatigue you are currently experiencing and develop recommendations to help you get on the road to recovery.

Cortisol Awakening Response (CAR)

There is a predictable rise and fall of cortisol within one hour of waking. Morning salivary cortisol samples are taken at three times: as soon as you awaken, 30 minutes after awakening and again at 60 minutes. The results represent a mini "stress test" for how the HPA axis is responding to stress and pertains to anticipated demands of the upcoming day. It gives the clinician guidance on the patient's overall lifestyle, how the HPA axis is functioning and assists in developing a prognosis and program for recovery.

Elevated CAR

Indicates an increase of perceived stress, or other mental and physiological stressful drivers. The stress response is heightened and increasing the amount of cortisol being released. This may cause restlessness or irritability. It is key to work with a health care practitioner to design appropriate lifestyle management to ease and eliminate the stressor(s) that is causing this stress response. If the stressor is not identified, the condition will progress and begin affecting other functions, like blood sugar regulation, sleep disturbances, greater mood challenges, and inflammation.

Suppressed CAR

A low cortisol response in the morning reflects a down-regulated stress response or depletion in resources. This is attributed to an individual experiencing chronic stress, which triggers an overabundance of cortisol release and eventually leads to burnout. Common causes are sleep apnea, PTSD, seasonal affective disorder, chronic fatigue and true adrenal insufficiency.

Normal CAR

Healthy individuals respond appropriately to stress and cortisol values are within reference range. Symptoms are what leads practitioners to order tests. If a patient is having symptoms that would direct a clinician to order a salivary test and CAR is within reference range, the four-point diurnal cortisol rhythm may be irregular. A normal CAR, however, typically indicates a shorter recovery time for the patient. This is a perfect opportunity to assist an individual with healthy lifestyle management, glycemic control, nutritional supplementation and seven to nine hours of quality sleep.

Four Key Stressors of the Human Body

Assessing your HPA function may help you and your health care provider determine the specific actions you need to take to improve your health. A crucial step is to determine which and/or how many stressors are affecting you. Understanding the "root cause" will restore balance to your stress response system and will significantly improve your overall health.

When most people think of "stress" they usually limit their definition to mental and emotional stressors. Going through a divorce or changing jobs can send your stress (and cortisol) levels soaring. However, blood sugar imbalances, inflammation and inadequate sleep are also potent stimulators of cortisol production within the HPA axis. For example, you may have a low level of anxiety in your life, or you may be getting enough sleep each night, but if you are consuming a diet high in sugar, your cortisol, as well as insulin, levels will be on a continuous roller coaster ride.

Another example would be someone who eats a balanced diet, has a low level of anxiety, but has a high degree of inflammation in his or her body. That inflammation is sending signals to the HPA axis to secrete the cortisol needed to put out the inflammatory fire.

The specific driver of HPA axis activation may vary from individual to individual. However, the bottom line is, if the HPA axis is required to work over-time, cortisol and DHEA levels will eventually become imbalanced, along with other systems in your body.

The questionnaire included on the following page is designed to help you determine the root cause of HPA axis dysfunction. *Please take a few minutes to complete the **4 Key Stressors Questionnaire** to help you and your health care provider identify key stress response triggers in your body.*

After identifying your top stressor or stressors, you may want to focus on one component, such as regulating your blood sugar levels through diet and lifestyle changes and nutrient therapy **(Chapter 1: Blood Sugar Control)**, supporting your mental and emotional health **(Chapter 2: Mental and Emotional Stress)**, improving your sleep cycle **(Chapter 3: Overcoming Insomnia)**, or reducing your body's inflammatory burden **(Chapter 4: Reducing Inflammation).**

4 Key Stressors Questionnaire

Patient Name: _____ **Date:** _____

Please circle **yes** or **no** for each of the following questions. Please fill in the Other sections for any unlisted issues related to each category.

After identifying and reviewing your primary stressor(s) with your health care provider, please refer to the corresponding chapter **(Chapter 1: Blood Sugar Control, Chapter 2: Mental and Emotional Stress, Chapter 3: Overcoming Insomnia, Chapter 4: Reducing Inflammation)** in the SOS Stress Recovery Program Patient Handbook for lifestyle, dietary and nutrient therapy recommendations.

Blood Sugar Imbalance

- Do you experience symptoms of hypoglycemia such as dizziness, shakiness or brain fog between or following meals? Y N
- Do you frequently miss or delay meals? Y N
- Do you frequently crave sugar or carbohydrates? Y N
- Do you consume excessive sugar or refined carbohydrates? Y N
- Are you diabetic or pre-diabetic? Y N
- Do you regularly consume alcohol or caffeine? How much per day? _____ Y N
- Do you consume food within two hours before bedtime? Y N
- Other _____

Mental and Emotional Stress

- Do you frequently experience anxiety? Y N
- Do you suffer from depression? Y N
- Do you suffer from mood swings? Y N
- Do you have difficulty getting motivated? Y N
- Do you frequently experience feelings of agitation, anger, fear or worry? Y N
- Do you consider your job, relationships or finances stressors in your daily life? Y N
- Are you a caregiver for a parent or disabled child? Y N
- Other _____

Sleep Cycle Disturbances

- Are you experiencing problems falling asleep? Y N
- Are you experiencing difficulty staying asleep? Y N
- Are you sleeping less than 7-9 hours each night? Y N
- Do you awaken not feeling well-rested in the morning? Y N
- Do you work 2nd or 3rd shift or keep late night hours? Y N
- Do you use electronic devices within two hours before bed? Y N
- Do you eat within two hours of bedtime? Y N
- Do you frequently feel drowsy throughout the day? Y N
- Do you snore? Y N
- Other _____

Inflammatory Imbalance or Chronic Pain

- Musculoskeletal: Do you suffer from headaches, muscle, back or joint pain? Y N
- Gastrointestinal: Do you suffer from IBS, Crohn's disease or diverticulitis? Y N
- Dermatological: Do you suffer from hives, eczema or psoriasis? Y N
- Respiratory: Do you suffer from asthma, bronchitis, seasonal allergies or hay fever? Y N
- Autoimmune: Do you suffer from any autoimmune condition such as MS, lupus or rheumatoid arthritis? Y N
- Immunological: Do you suffer from food allergies, chronic infections or frequent Illness? Y N
- Other _____

- Do you experience symptoms of hypoglycemia such as: dizziness, shakiness or brain fog between or following meals?
- Do you frequently miss or delay meals?
- Do you frequently crave sugar or carbohydrates?
- Do you consume excessive sugar or refined carbohydrates?
- Are you diabetic or pre-diabetic?
- Do you regularly consume alcohol or caffeine?
- Do you consume food within two hours before bedtime?

Chapter 1: Blood Sugar Control

Erratic blood sugar levels, particularly hypoglycemia (low blood sugar) is a common problem for people with HPA axis dysfunction. Constant fluctuations in blood glucose create one of the body's most stressful conditions.

When you eat foods high in carbohydrates (sweets, refined carbohydrates), you trigger insulin production from your pancreas. The overproduction of insulin causes a rapid and drastic reduction in blood glucose, for a short period of time. This is often experienced as drowsiness and fatigue, following the consumption of a high carbohydrate-containing meal.

So, what comes to the rescue when your blood sugar takes a nosedive? Cortisol. Low blood sugar triggers the adrenal glands to produce more cortisol. This stimulates our body's cells to release sugar in the form of glucose from our liver to raise our blood sugar. When this cycle of glycemic stress is repeated over and over again, it places a constant burden on the HPA axis.

Your diet plays a major role in the cycle of stress and the daily burden placed on the HPA axis. Balance your meals with nutrient-dense, high-fiber, high-protein and with healthy fats (omega-3s). This will help your blood sugar levels remain steady, help you maintain healthy energy levels and keep your mind sharp and focused throughout the day.

Take Control of Your Blood Sugar

1. Eat a balanced breakfast every morning. This will help ensure you do not start the day in a hypoglycemic state.

2. Consume balanced meals and healthy snacks throughout the day. As opposed to skipping meals, this approach will help keep your blood sugar steady and metabolism running efficiently. Ask your health care provider if a change in meal timing or frequency is required to help you maintain better glucose control.

3. Eat mixed meals or snacks of protein, carbohydrate and fat. Eaten alone, carbohydrates will often cause an increase in the insulin response. Conversely, when eaten as part of a protein-based, high-fiber meal, the glycemic response (fluctuations in blood sugar levels) is generally lower.

4. *Avoid* refined carbohydrates and simple sugars. Items such as candy, sodas, cakes, desserts and juices have a high glycemic index, which cause a rapid rise in glucose. White bread, white rice and white sugar are refined food products. Whole grains such as wild rice, millet, quinoa, brown rice, and amaranth are healthy whole-grain options high in fiber and B vitamins. *See: Glycemic Index Food List for additional information.*

5. Eat protein at every meal. Protein sources low in saturated fat include legumes (beans, peas, and lentils), eggs, white meat chicken, turkey, wild game, and low-fat dairy. Legumes contain significant amounts of fiber, which helps to slow the release of glucose into the bloodstream. Fiber also helps to detoxify the intestines by removing toxins.

6. Eat a serving (3 ounces) of fish 2-3 times a week. Certain types of fish (salmon, mackerel, tuna, herring and sardines) and flax oil are high in omega-3 fatty acids, a type of fat that is highly effective for restoring normal insulin sensitivity. In addition to providing omega-3 fatty acids, fish is an excellent source of protein. If you are a vegetarian, or cannot consume fish, excellent vegetarian sources of omega-3 fatty acids include ground flax seeds, flax seed oil (keep refrigerated), chia seeds, hemp seeds, sesame seeds, walnuts and Brussels sprouts.

7. Eat foods high in fiber. Fiber helps slow the absorption of glucose into the bloodstream. Hard-shelled beans such as black beans, kidney beans, navy beans and chickpeas are high in fiber. Adding at least a half cup of beans to a meal will significantly boost your fiber intake. Other foods high in fiber include fruits, vegetables, nuts and seeds.

8. Avoid saturated fat or processed foods that have on their labels "hydrogenated" or "partially hydrogenated" vegetable oils. These fats have a negative impact on how the body uses insulin. Hydrogenated fats, or trans fats, are commonly used in packaged goods including margarine, shortening, French fries, doughnuts, cookies and crackers. You can determine the amount of trans fats in a product by looking at the Nutrition Facts Panel.

9. Each meal should contain a healthy source of fat. Healthy monounsaturated and polyunsaturated fats can be included in your diet by using cold-pressed extra-virgin olive oil, and sesame (tahini), flax, walnut, almond, grapeseed, and avocado oils. For medium-heat cooking, use olive oil. Flax oil can be used to top salads or any other cold dishes and should be kept refrigerated (Flax oil should never be heated). Avocado and olives are also delicious ways to add healthy fats to your daily meals.

10. Limit the consumption of starchy vegetables. Starchy vegetables such as potatoes, corn (including popcorn), carrots and peas can cause a rapid increase in blood sugar. Instead, be sure to include several daily servings of colorful vegetables, including yellow and green. Most vegetables are low in calories and have a minimal effect on blood sugar. Colorful vegetables are also high in antioxidants.

11. Drink adequate amounts of liquids to keep your body hydrated. Water, seltzer, mineral water, and herbal, decaffeinated or green tea will help keep you hydrated, without affecting blood sugar levels.

12. Avoid artificial sweeteners. Many artificial sweeteners are marketed as containing zero sugar. However, they may also be toxic to the brain. Natural sweeteners that do not contain sugar or toxic chemicals include stevia, xylitol and erythritol.

13. Be sure to exercise regularly. A sedentary lifestyle is a major contributor to diabetes and heart disease. Physical activity helps maintain insulin sensitivity, blood glucose and muscle mass, and produces chemicals that promote relaxation.

Glycemic Index Food List

Category	Low Glycemic Foods	High Glycemic Foods
Beans	Black beans, garbanzo, kidney, lentil, lima, mung, pinto, sugar-free baked beans	Baked beans with sugar
Bread	100% whole grain	Bagel, white bread, white rolls. Note: all white-flour products have a high GI so try to avoid them
Fruits	Most fruits are low glycemic index	Dates, watermelon, figs, apricots, raisins
Grains	Barley, bran, buckwheat, brown rice, quinoa, rye	White rice, waffles
Snacks, Nuts, Chips, etc.	Nuts, seeds	Corn chips, jellybeans, pretzels
Sweeteners	**Natural sweeteners:** Stevia, xylitol, agave nectar, brown rice syrup, maple syrup **Artificial sweeteners-not recommended:** Sucralose (Splenda™), aspartame(Equal™, NutraSweet™)	White sugar, brown sugar, corn syrup, high fructose corn syrup, cane sugar
Vegetables	Most vegetables are low glycemic index	Potatoes in any form, carrots, corn, pumpkin, beets

Genetic predisposition, high stress levels, poor dietary habits and an inadequate exercise regimen can make it difficult to maintain adequate blood sugar levels. Healthy blood sugar regulation requires a number of metabolic factors working at optimal capacity. Micronutrients, such as chromium, biotin and vanadyl sulfate, are required to support enzymatic reactions and cellular signaling systems that maintain the body's homeostasis.

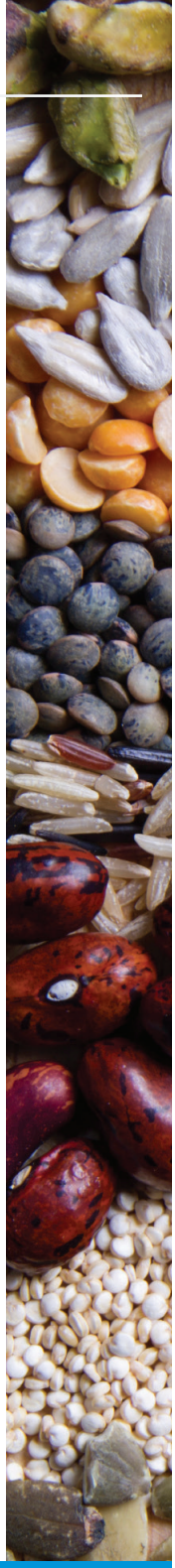
Nutrients that Help Promote Healthy Blood Sugar Levels

Alpha lipoic acid	• Potent antioxidant shown to improve blood sugar metabolism and increase insulin sensitivity • Shown to improve diabetic neuropathy	200-1,000 mg/day
Berberine	• A plant extract found in botanicals such as *Hydastatis canadensis* (goldenseal), *Coptis chinensis* (goldenthread), *Berberis aquifolium* (Oregon grape), and *Berberis vulgaris* (barberry) • Helps activate specific proteins in the body that improve insulin sensitivity, and down-regulates genes involved in fat storage, while activating genes involved with burning fat	600-1,500 mg/day
Biotin	• B vitamin that stimulates glucose-induced insulin secretion, enhances insulin sensitivity and accelerated glucose metabolism in the liver and pancreas	1,000-6,000 mcg/day
Chromium	• Helps maintain normal glucose levels by facilitating the uptake of glucose into cells, increasing insulin sensitivity and decreasing blood lipids	200-800 mcg/day
Cinnamon bark extract	• Improves blood sugar levels by increasing insulin sensitivity • Supports healthy body composition by increasing lean body mass while reducing body fat	Note: Doses vary according to the concentrated extract being used. Cinnulin® (Cinnamon Bark Extract (150-300 mg/day)
Gymnema leaf extract	• Gymnema is an Ayurvedic herb used for thousands of years. It contains compounds called gymnemic acids that help reduce the absorption of glucose in the intestines and delays the rapid release of glucose into the bloodstream	400-800 mg/day
Vanadyl sulfate	• Mineral that mimics the action of insulin • Increases insulin sensitivity • Increases transport of glucose into cells • Decreases glucose production	25-50 mg/day

When not consuming a diet with enough fiber, supplementation has been shown to enhance blood glucose control, decrease insulin levels and reduce the number of calories absorbed by the body. Fiber helps cleanse the body by decreasing toxin absorption in the bloodstream. The best fiber sources for reducing post-meal glucose levels, lowering cholesterol levels and promoting weight loss are those rich in water-soluble fibers.

Water-Soluble Fibers that Support Blood Sugar Regulation

Arabinogalactan	• Arabinogalactan is a fermentable fiber that slows the absorption of glucose into the bloodstream and supports the health of good bacteria
Flaxseeds, ground meal, or powder	• Flaxseeds are high in fiber and omega-3 fatty acids, which have a balancing effect on blood sugar and lipid levels • Research has shown flax seed lowers fasting blood sugar levels along with low-density lipoprotein levels (LDL) and triglycerides, while increasing healthy high-density lipoprotein levels (HDL)
Glucomannan from konjac root	• This dietary fiber has been shown to lower fasting glucose levels, LDL cholesterol and triglycerides in diabetic patients
Inulin	• Derived from chicory root, inulin is a fiber that has multiple benefits including lowering blood sugar levels, reducing triglyceride levels and promoting the growth of beneficial bacteria in the gut
Psyllium	• A rich source of soluble fiber, psyllium is best known as a bulk-forming laxative • Psyllium has been shown to lower fasting blood sugar in people with type 2 diabetes



- Do you frequently experience anxiety?
- Do you suffer from depression?
- Do you suffer from mood swings?
- Do you have difficulty getting motivated?
- Do you frequently experience feelings of agitation, anger, fear or worry?
- Do you frequently experience racing thoughts?
- Do you suffer from an addictive disorder?
- Do you find little joy in activities you once found pleasurable?

Chapter 2: Mental and Emotional Stress

When asked, most people can easily identify daily circumstances or causes of stress (finances, coworkers, relatives, etc.). But stress is not always a black-and-white issue of cause and effect. It is actually your perception of an event that plays a major role in whether a stressor will trigger a fight-or-flight response.

Some life events are universally painful and stressful, such as the death of a loved one. Many of the events on the **Life Event Stress Inventory** simply cannot be avoided. However, some of the daily stressors you encounter can be controlled. This depends greatly on your individual *perception* of the particular stressor.

For example, some people may find it extremely stressful to speak in front of an audience, while others find it enjoyable and look forward to it. This same potential stressor can evoke a drastically different response, depending on each individual's perception of public speaking.

It is important to remember your perception of an event is what creates stress-often more than the event itself. After all, what you may perceive to be a stressful experience might be someone else's adventure: skydiving, starting a new job or meeting new people at a cocktail party.

What Makes an Event "Stressful"?

Scientists who study stress report events that cause the most mental and emotional stress usually have four similarities. First, *we can become stressed by things that are new to us.* First-time experiences cause you to anticipate how you will feel during the event (pleasure or pain), triggering a stress response.

Combine this with *unpredictability*, the second feature of mental and emotional stress, and the stress response is heightened. A first-time driving lesson on a busy metropolitan freeway is a good example of a new and unpredictable situation—for both driver and instructor!

The third cause is a *sense of threat* to your physical well-being or psyche. While it is not always thought of as stress, the nervous anticipation of someone else's opinion of you is a threat to your psyche and, therefore, a source of stress.

The fourth cause of potential stress includes events where you may experience a *loss of control over a situation.* This is common for parents of teenagers who are exercising more independence.

People that are working in middle management positions often struggle with this type of stress. Quite often, middle managers are given responsibility (and accountability) without feeling like they have the tools (resources, finances, time, etc.) they need to accomplish the task. The stress of middle management positions often consists of all four causes of stress: they typically carry the responsibility of performing new tasks (novelty), which have unpredictable outcomes, resulting in a sense of threat to their job security. Not surprisingly, middle managers are often considered to have the highest stress in most corporations, leading to poor job satisfaction, burnout and high turnover.

How can you eliminate the stress of novelty, unpredictability, threatening events and loss of control?

Putting the Brakes on a Vicious Stress Cycle

Being calm during a stressful situation is easier said than done, but it is an important step in ceasing chronic stress and the vicious stress cycle that affects your physical and mental health. Stress perception, and your response to stress, begins in the brain.

Being cognizant of the following factors can minimize the effects of stress, before it affects your health. Even if stress has already taken a toll on your well-being, the body still has the ability to heal itself.

1. Be mindful of your current stress level so you can stop and 'take a breather' before serious anxiety sets in.
2. Implement positive stress management techniques that help re-program your brain and reduce the overall burden to the HPA axis.
3. Use natural therapies to restore balance to your body's natural stress-buffering systems, which include the HPA axis and neurotransmitter support.

Being Mindful of Your Current Stress Level

Journaling can be an effective technique for successfully dealing with the stress in your life. Keeping a daily thought journal can help you practice a technique called 'reframing.' Reframing is the art of consciously evolving negative thoughts into neutral or positive thoughts.

The goal of the thought journal is to prevent stress, anxiety or negativity from taking over your thought processes. As you become more aware of stressful thoughts, you can begin clearing the stressful or negative thought(s) from your mind. Instead of dwelling on them, you can choose to reflect on positive, uplifting thoughts.

To create your thought journal, begin by writing down a specific stressful situation. In the next column, make a note about how this situation made you feel, along with the automatic thoughts it triggered. In the last column, rate the impact this situation had on your mood, on a scale of -5 to 5 (-5 denotes extreme distress while 5 denotes positive stress). After recording this information, go back and identify any positive action, thought, or step that can help you better handle this situation. A sample thought journal is provided on the next page.

Keeping a Thought Journal

Situation	Mood	Automatic Thoughts	Impact on Mood
What happened that caused stress?	How did you feel in this situation?	What are you telling yourself about this event?	-5 to 5
Example: I missed a deadline at work.	1. Angry 2. Upset 3. Anxious	1. I can't do anything right. 2. I should have asked for more time to complete the task. 3. I'm going to get fired. ***Replacement Thoughts*** 1. I did an excellent job on the project; my coworkers and the customers seemed pleased with the results. 2. In the future, I will communicate progress and request more time, if needed, from my manager in order to avoid work-related stress.	

Try keeping a thought journal for 30 days. Write down any negative or anxious thoughts that cross your mind each day. Some days you may have larger issues; other days you may experience minor problems. However, each anxious thought or negative self-talk adds up. Recognizing negative thoughts and their potential damage is an important first step. A thought journal can help you become more mindful of pitfalls in your thinking, so you can actively transform each issue by intentionally replacing negative thoughts with positive replacements.

As you become more aware of increasing stress levels or negative thought patterns, you can face problems head-on by incorporating healthy stress-management techniques to calm your nervous system.

The following is a list of recommended stress management techniques. Incorporating these healthy steps into your daily life will help you manage stressful situations and reduce the negative effects that stress can have on your health.

Recommendations for Relieving Stress and Taking Control of Your Health

1. **Identify your stressors.** Becoming mindful of daily stressors and promoting positive thought patterns is a commonly used practice in cognitive behavior training. This technique helps reframe thoughts and reprogram the brain to engage in healthy thinking. Try keeping a thought journal for 30 days to incorporate this practice into your daily life.

2. **Simplify things.** Identify the things in your life you can change or eliminate that would make life simpler. This will greatly reduce your stress level.

3. **Learn to say no.** People who can't say no often have a high degree of stress in their life, as they try to juggle the demands and requests of everyone around them.

4. **Find a healthy balance.** Increase time spent doing activities that you find (or once found) enjoyable. Scheduling down time for yourself is extremely important. What do you find fun or relaxing: stretching, getting a massage, playing golf, painting, taking a hot bath, reading an inspiring book? Scheduling this time every week will not only help you reduce your stress level, it will also help you change your outlook.

5. **Avoid isolation when stress is high**. Many people tend to become isolated, as well as physically and mentally inactive after a stressful event, which can really depress your mental outlook. Connecting with friends, family or community groups that offer emotional support, or engaging in activities that you find enjoyable can help turn potentially harmful isolation patterns into a positive event.

6. **Laugh often.** Laughter provides a release for tension and helps take your focus off the worries and frustrations of the day. Laughter also lowers cortisol levels and boosts the immune system.

7. **Stop procrastinating**. Procrastination can create a lot of stress because tasks that remain uncompleted tend to accumulate in your mind. If you are prone to procrastination, learning ways to overcome this tendency will reduce stress in your life.

8. **Exercise regularly.** Go for a brisk walk or bike ride. Exercise, particularly aerobic exercise, allows your body to release tension and forces you to breathe much more deeply. Aerobic exercise also causes the brain to release endorphins and neurotransmitters, such as serotonin, which enhance your mood.

9. **Spend time in nature**. The modern, hermetically sealed lifestyle isolates people from the therapeutic effects of nature, often leading to depressed spirits and increased risk of illness and disease. Nature deficiency includes decreased exposure to fresh air and sunlight, which is important for maintaining vitamin D levels and a healthy immune system. Get outside as often as you can. Take a few deep breaths to fill your lungs with fresh air, listen to the calming and peaceful sounds of nature and let your eyes soak in the natural colors of the world while you reduce stress and reenergize your mind and body.

10. **Keep a gratitude journal.** Record five things you experienced in the past week for which you are grateful. From the warm morning sunshine to the generosity of a friend, take time to elaborate on the detail; this has more impact than quickly jotting down a superficial list.

The more you concentrate on positive thoughts and actions, the more you reprogram your brain and improve your mental outlook.

The Physiological Effect of Stress on Mental Health

The stress system's fight-or-flight response is an essential instinct for survival, but when the biological triggers that prompt the body to respond to potential threats fall out of alignment, a reduction in our mental ability to cope with daily stress can occur. This results in low mood, anxiety, irritation and an inability to focus.

Stress combined with an overactive HPA axis has been implicated in contributing to a wide variety of mental health problems. Cortisol and other HPA axis imbalances can play a role in depression, anxiety disorder, addiction, anorexia nervosa, bulimia, obsessive-compulsive disorder, attention deficit hyperactivity disorder (ADHD) and post-traumatic stress disorder (PTSD).

Stress causes the adrenals to produce elevated levels of cortisol resulting in a sequence of changes in the brain that affect mood, focus and memory. When stress levels are high, fight-or-flight chemicals epinephrine (adrenaline) and norepinephrine are also released in higher-than-usual levels from the adrenals glands, as well as nerve cells in the brain, resulting in a state of hyper-vigilance (a heighted sense of alertness). This state of hyper-vigilance leads to anxiety and restlessness.

When you are experiencing overwhelming levels of stress, the brain naturally releases the mood-regulating and calming neurotransmitters, such as serotonin and GABA, to help you cope. However, prolonged stress can result in a depletion of these relaxing neurotransmitters. Stress also increases the excretion rate of crucial vitamins and minerals, including vitamins C, B-complex and magnesium, which are essential for the stress response and brain health.

Natural Therapies to Restore Balance to the Body's Natural Stress-Buffering Systems

Within the HPA axis, DHEA is the hormone counterpart to cortisol that supports the "resistance" reaction that can reduce the negative effects of elevated cortisol levels in the brain. In the central nervous system (CNS), the brain chemicals serotonin and GABA help you stay calm and positive during and following a stressful event. Maintaining healthy cortisol-to-DHEA ratios, as well as ample amounts of serotonin and GABA, is an important step in maintaining a positive mental outlook.

There are several nutrients and botanicals that help calm the nervous system and brighten mental outlook. Supplementing with these natural ingredients will provide a significant boost to the brain and body's biochemical stress-fighting mechanisms.

The term "adaptogen" describes plants that support the resistance phase of stress response and promote recovery from stress. Adaptogens' wide array of health benefits includes restoring balance to cortisol and DHEA ratios, strengthening the immune system, and helping to prevent physical and mental exhaustion. Adaptogenic herbs are a great addition to any supplement regimen during times of stress. Adaptogenic herbs can sharpen mental edge by increasing memory and the ability to focus, supporting mood, and promoting relaxation.

Based on your stage of stress and test results, your practitioner may suggest supplementation with DHEA or pregnenolone. The following tables provide lists of nutrients and the specific roles they play in regulating stress response, mood and cognition.

Amino Acids and Their Role in Mood Regulation

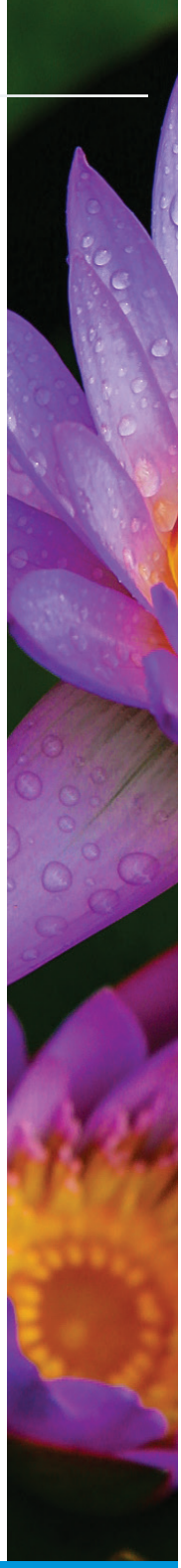
5-hydroxytryptophan (5-HTP)	• Amino acid that converts into serotonin in the brain • Increasing serotonin promotes a positive mood, decreases anxiety, and helps regulate the appetite	50-400 mg/day. Higher doses are often used to help with sleep and severely compromised mood.
L-taurine	• An amino acid that is found abundantly in the brain and has brain-protective properties • Calms the nervous system by binding to GABA receptors and activating glycine receptors in the brain	100-1,000 mg/day
L-theanine	• Amino acid naturally found in green tea; increases serotonin and dopamine production in the brain • Counteracts the stimulating effects of caffeine • Increases attention and promotes relaxation by increasing alpha brain wave activity in the brain	100-400 mg/day
L-tyrosine	• Converts into the neurotransmitter dopamine in the brain, which brightens mood, supports memory and fights addiction • Supports thyroid function	200-2,000 mg/day
PharmaGABA™	• Natural form of GABA, found to promote a relaxed and effortless state of focus by increasing alpha waves and decreasing beta waves in the brain	100-400 mg/day

Vitamins/Minerals and Their Role in Mood Regulation

5-MTHF (5-methyltetrahydrofolate) or folic acid	• Bioactive form of folic acid. Works together with B12 as a methyl donor, which helps increase serotonin and melatonin production • Folate deficiency can cause neurological, cognitive and psychiatric dysfunction	400 mcg-1 mg
Inositol	• B vitamin that is an important component of cell membrane signaling. Helps release neurotransmitters from within nerve cells • A deficiency of inositol can affect brain signaling resulting in symptoms such as anxiety and depression	1,000-2,000 mg/day
Magnesium	• Important mineral known as “nature’s tranquilizer” • Relaxes muscles, calms the mind • Reduces anxiety and increases the production of calming neurotransmitters, such as serotonin	100-800 mg/day
Vitamin C	• Important antioxidant to support the immune systems defense of colds and recurrent infections • Involved in supporting fatigue and mood states such as anxiety and depression during stressful times	1,000 mg/day

Botanicals and Their Role in Mental Health and Stress Response

Ashwagandha (*Withania somnifera*)	• Shown to decrease symptoms of chronic stress, including anxiety and depression
Bacopa monnieri	• Nootropic and adaptogenic herb found to improve stress resilience, enhance concentration, focus and memory. Shown to protect against DNA cleavage and boost immune system with free-radical scavenging activity
Eleuthero (*Eleutherococcus senticosus*)	• Shown to improve mental performance during stressful conditions
German chamomile (*Matricaria chamomilla*)	• Decreases anxiety and has been shown to have a mild sedative effect
Holy basil (*Ocimum sanctum*)	• Adaptogenic herb shown to improve stress resiliency and attention • Promotes immune cell efficacy and decreases sleep disturbance
Hops (*Humulus lupulus*)	• Mild sedative often used for anxiety, nervousness, and insomnia
Licorice root extract	• Increases the half-life of endogenous cortisol to increase cortisol activity • Increases stress resilience and energy
Mucuna pruriens	• Commonly known as velvet bean, naturally contains L-dopa, the precursor to the mood-enhancing neurotransmitter, dopamine
Passionflower extract (*Passiflora incarnata*)	• Decreases anxiety by interacting with GABA receptors • Eases feelings of overstimulation and scattered thoughts
Rhodiola rosea	• Supports mood, memory and mental performance • Found to decrease anxiety
Schisandra berry	• Used for centuries in China and Russia to support stress response and mental clarity • Supports overall brain function, including learning and memory • Shown to increase concentrations of nitric oxide, a molecule that causes the blood vessels to expand, resulting in increased blood flow
Valerian root (*Valeriana officinalis*)	• Components of valerian (including valerenic acid) relax muscles and promote relaxation by stimulating the release of GABA in the central nervous system and binding to GABA receptors



Hormones and Their Role in Mood Regulation

DHEA	• Helps improve the cortisol to DHEA ratio as well as its anti-inflammatory and neurological effects, specifically for helping to improve mood-regulation	5 mg under the tongue 2-3 times per day
Pregnenolone	• Pregnenolone plays a key role in hormonal balance as a key precursor to cortisol, DHEA and progesterone • Prenenolone has been shown to support a balanced mood and promote cognitive health by modulating the transmisson of messages between neurons	10 mg, 1 tablet under the tongue 2-3 times per day

- Are you experiencing problems falling asleep?
- Are you experiencing difficulty staying asleep?
- Are you not sleeping seven to nine hours each night?
- Do you wake up feeling well rested?
- Do you suffer from light cycle disruption or shift work issues?
- Do you frequently feel drowsy throughout the day?
- Do you eat within two hours of bedtime?

Chapter 3: Overcoming Insomnia

Sleep is the body's way of metabolically and psychologically resetting itself. Your circadian, or daily rhythm is thought to be regulated by an internal biological clock within the brain called the suprachiasmatic nucleus (SCN), with an approximately 24-hour cycle. Sleep helps your brain and body readjust to the stress placed upon it during the day.

Adequate sleep is necessary for long-term health and regeneration. Many of the body's repair processes occur during the deep, slow-wave stages of sleep. Skin and other connective tissues regenerate themselves during the sleep cycle. The pituitary gland secretes growth hormone, an anabolic and rejuvenating hormone, primarily at night, which is essential for maintaining strength, muscle mass and liver function, normalizing blood sugar, and keeping your immune system healthy. Many of your neurotransmitters, such as serotonin, dopamine and norepinephrine, which are important for regulating mood and keeping you focused and alert, are also synthesized during deep stages of sleep.

Sleep also functions as an "antioxidant" for the brain due to its ability to bind toxins (free radicals) in our body during the sleep cycle. Restful sleep ensures scavenging of accumulated free radicals preventing minimal damage to our nerves and brain. This explains why even one night of bad sleep can leave you feeling tired, irritated and cranky, and impairs your ability to focus.

Poor sleep can affect your health in numerous ways. Lack of quality sleep can dampen immune defenses, leaving you more susceptible to catching a cold or flu. It also changes your body's production of and response to hunger hormones, which increases your appetite for unhealthy comfort foods. Researchers have discovered many links between poor sleep and obesity, diabetes and cardiovascular disease.

Sleep deprivation can quickly result in an overproduction of cortisol and adrenaline (epinephrine), causing a vicious cycle of stress, anxiety, blood sugar fluctuations, and increased heart rate and blood pressure. Maintaining a healthy sleep cycle and getting an optimal amount of sleep each night (seven to nine hours) is imperative for staying healthy and improving your stress-coping mechanisms.

Improving the Sleep Cycle

When it comes to improving your sleep cycle, it is important to closely examine lifestyle habits that disrupt your body's natural sleep-promoting mechanisms. This will help ensure optimal sleepcycle regulation.

To promote a better sleep cycle and support the body's natural circadian pattern, it is important to maintain a *consistent* sleep schedule, even on the weekends. According to the National Sleep Foundation, you should plan to get seven to nine hours of sleep each night, aiming for a bedtime before 10 p.m., or earlier (if you are tired). The 10 p.m. sleep time is ideal as it aligns well with the body's natural circadian rhythm and assists HPA axis recovery. This supports healthy energy levels throughout the day, as well as helps you to remain calm and maintain mental alertness and focus.

In order to help your body reestablish its natural circadian rhythm, it is critical to expose your body to the natural day and night cycle, meaning early morning light exposure immediately upon awakening and at least 30 minutes of sunlight during the day. Your retina, located at the back of the eye, contains photoreceptors that detect changes in daylight. As the sun goes down and you are exposed to more darkness, the photoreceptor cells send signals to your brain that start preparing your body for sleep. These signals regulate body temperature as well as the release of hormones and chemicals that regulate the sleep-wake cycle. Upon the onset of darkness, a gland in the brain called the pineal gland begins to release melatonin, triggering sleepiness. The progressive decrease of sunlight throughout the day is the body's natural trigger for melatonin excretion. Turning the lights off, or using very dim lighting, two to three hours prior to bedtime will help trigger melatonin release in the brain.

In addition to overhead lighting, begin removing other light stimuli, specifically blue light devices such as TV, smartphones, tablets and computers, two to three hours prior to going to bed. Instead, practice relaxation techniques such as taking a warm bath, listening to calming music, stretching, or reading a book.

Another important sleep strategy is to restrict food consumption to an eight-to-twelve-hour period of time. Time restricted eating is an advantageous method to improve overall health by synchronizing and strengthening our 24-hour circadian clock. This contributes to greater cognitive skills, motor control, endurance, energy expenditure, cardiac function, and slowing the aging process. It also promotes ease of falling asleep, staying asleep and feeling refreshed upon awakening. At the very least, restricting food within two to three hours prior to going to sleep is recommended, as a quiet digestive system allows the body to repair and avoid high blood sugar.

Making an effort to change lifestyle habits that may be affecting your ability to sleep will pay great dividends, particularly when combined with nutritional therapy.

Chronic Insufficient Sleep

Chronic insufficient sleep can cause major health concerns, safety risks, decreased performance and productivity. Below is a list of common causes of sleep disturbance.

Sleep Deprivation

- Acute (single night)
- Chronic (short or disrupted sleep)

Light at Night

- Bright light bulbs
- Blue light devices (TV, smartphone, computer, etc.)

Phase Shifters

- Jet lag
- Daylight savings

Stress

- Mental/emotional stress (work-related, relationships, finances, etc.)
- Inflammation (headache, muscle/joint pain, GI infection, skin rash, allergies, autoimmune)

Shift Work

- Third shift (day/night disruption)
- Swing shift (consistently changing sleep cycle timing)

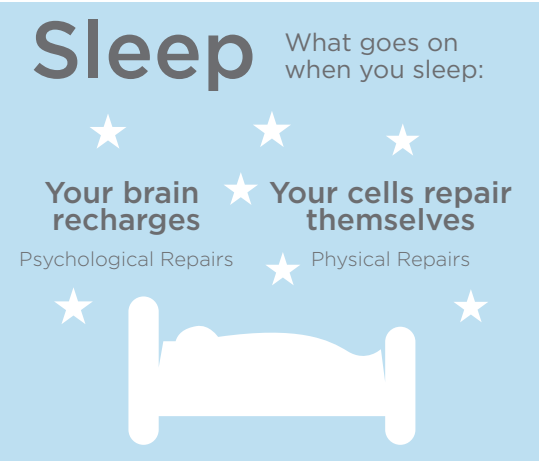
Diet

- Timing of eating (skipping meals [especially breakfast], late night eating)
- High sugar or fat
- Alcohol

Recommendations for Taking Control of Your Sleep

- **Aim for seven to nine hours of sleep each night.**
- **Maintain healthy sleep hygiene.** Go to bed and wake up at the same time, including weekends, to synchronize the body's circadian clock. Resist the temptation to sleep outside of a consistent seven to nine-hour cycle. Avoid sleeping in or taking naps throughout the day. If you must nap, minimize naps to 30 minutes or less.
- **Avoid caffeine (after 3 p.m.) and alcohol (after dinner).** Intake of either, particularly later in the day, can significantly disrupt the sleep cycle.
- **Avoid eating two to three hours before bedtime.** Eating decreases the body's ability to go into a deep, restful sleep for several hours. Being mindful to consume only water within the few hours before going to sleep will ensure other hormones and digestive processes will not disrupt your sleep cycle.
- **Minimize lighting and use of electronics** (TV, smart phone, tablets, computer) two to three hours prior to sleep time to induce relaxation. Use blue blocking filters in the evening as the natural light dims.
- **Avoid visible clocks and clock watching.** Keeping track of the time spent not sleeping can be stressful and worsen insomnia. The light emitted from a clock can also disrupt sleep.
- **Write down a list of tomorrow's tasks so you can sleep worry-free.**
- **Keep the bedroom cool (65-67^{o}F).** Keeping your face cool (and your hands and feet warm) can induce sleep and enhance melatonin production.
- **Keep the bedroom dark and quiet.**
- **Keep pets outside the bedroom at night.**
- **Invest in a quality pillow and mattress.**
- **Increase exposure to bright light or sunshine in the morning**. Maximize natural light during the day by walking or sitting outside on your lunch break (sitting in the shade counts). This will help regulate day and night cycles.
- **Exercise regularly.** Getting regular exercise has been shown to improve sleep quality. Moderate-intensity exercise, preferably in the morning or early evening, is best.

Tracking Sleep Efficiency



In order to help track sleep efficiency and hygiene, keeping a sleep journal, such as the sleep diary shown below, can ensure optimal sleeping habits are maintained. This record will also help you and your health care practitioner track changes with sleep-support supplementation.

To improve your quality of sleep, it is important to develop sleep strategies that benefit your ability to fall and stay asleep. Record the approximate number of hours you slept, including naps. Rate your quality of sleep on a scale of 1 (poor) to 5 (very restful), based on how you felt when you woke up and your productivity during the day. Write down the sleep strategies you employed prior to bedtime, using at least one of the sleep strategies per night listed in the "*Recommendations for Taking Control of Your Sleep*" on the previous page. Take note of any factors that impacted your sleep in a positive or negative way in the sleep notes section of the sleep diary. This feedback will inform you of necessary changes that will assist you to develop a solid sleep strategy and ultimately improve your overall quality of sleep.

Sample Sleep Diary

Day	Hours of Sleep	Quality of Sleep	Sleep Strategies	Sleep Notes
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

Natural Remedies for Sleep Support

Insomnia can occur secondary to psychological factors, such as stressful circumstances that interfere with the ability to get a good night's sleep; physiological factors, such as back pain, or restless leg syndrome; biochemical and hormonal imbalances, such as elevated nighttime cortisol levels or insufficient melatonin production; and nutrient deficiencies.

One of the most common nutrient deficiencies in the American population is magnesium, a mineral known as nature's tranquilizer, because of its profoundly relaxing effect on the body. Calcium is another important mineral; it helps release melatonin from the pineal gland, resulting in a deeper stage of sleep. When taken together, magnesium and calcium can have a synergistic effect and can help increase sleep efficiency.

Since the sleep cycle is regulated primarily in the brain, neurotransmitter balance is imperative. Serotonin and GABA are calming neurotransmitters that slow down the brain, promote relaxation and induce sleep. Many medications prescribed for insomnia have a profound effect on GABA activity. These medications increase the excretion rate of neurotransmitters by binding to their receptors. However, they do not increase the levels of neurotransmitters, which can be problematic if there is a deficiency.

A natural solution for increasing neurotransmitters levels can be provided by amino acids, the building blocks of proteins. Amino acids naturally convert into neurotransmitters in the brain. Supplementing with amino acids can help regulate the sleep cycle by getting to the root cause of the problem: low levels of sleep-promoting brain chemicals.

The following tables include lists of nutrients, including amino acids, minerals and phospholipids that promote a healthy sleep cycle. Incorporating these natural therapies, along with lifestyle recommendations and proper sleep hygiene, can have a profound effect on your ability to fall into a deeper, more restorable sleep each night. If you suffer from insomnia, please be sure to speak to your health care provider about using natural therapies to enhance your sleep cycle.

Your practitioner may suggest hormones based on your test results and supplementation may be warranted.

Numerous plants have also been shown to have a sedative action. Natural plant extracts can be helpful for regulating the sleep cycle, particularly when used as adjunct therapy to neurotransmitter and HPA axis balancing.

Nutrients that Support Sleep Cycle Regulation

Ingredient	Method of Action	Dosing
5-hydroxytryptophan (5-HTP)	• Amino acid intermediate that converts into serotonin and melatonin in the brain • Shown to be effective in treating insomnia, especially in improving sleep quality by increasing Rapid Eye Movement (REM) sleep • Shown to increase deep-sleep stages three and four without lengthening total sleep time	100-500 mg/day
Calcium	• Aids in the release of melatonin from the pineal gland resulting in deeper stage of sleep	200-1,000 mg/day
L-theanine	• Unique amino acid found in green tea • Shown to promote relaxation, beginning approximately 40 minutes after oral dosing • Supports alpha brain wave activity, which correlates with a perceived state of relaxation • Promotes GABA function and reduces the stimulating effects of caffeine	100-600 mg/day
Magnesium	• A mineral required for the production of serotonin and melatonin • Promotes relaxation by blocking excitatory neurotransmitter receptors in the brain, which relaxes the nervous system	100-800 mg/day
PharmaGABA™	• When naturally sourced, supports GABA activity in the brain, especially if taken before bedtime to reduce sleep latency (time required to fall asleep) and increase time spent in a deep sleep • Supports GABA activity and alpha brain wave activity, which promotes relaxation and reduces anxiety	100-600 mg/day
Phosphatidylserine	• Phospholipid found in the brain • Used extensively to support brain health • Lowers elevated cortisol levels that can contribute to frequent waking by interfering with slow wave sleep	100-800 mg/day

Hormones that Support Sleep Cycle Regulation

Ingredient	Method of Action	Dosing
Melatonin	• Helps induce sleep and increases total sleep time	1-3 mg before bedtime
Progesterone	• Facilitates the release of GABA to support sleep, mood and anxiety	100 mg immediate-release capsule before bed

Botanicals that Naturally Support the Sleep Cycle

Passion flower extract (*Passiflora incarnata*)	• Historically used as a relaxing and an anxiety-reducing herb • Shown to bind to GABA receptors, promoting relaxation • Approved by the German Commission E (German equivalent of the FDA) as an herb that fights nervous restlessness
Valerian root extract (*Valeriana officinalis*)	• The most studied botanical for inducing sleep • Components of valerian (including valerenic acid) relax the muscles and stimulate the release of GABA in the central nervous system and also bind to GABA receptors
Wild jujube extract (*Ziziphus jujube*)	• Recommended by traditional herbalists to help calm, relax and reduce stress, and promote sleep • Great for fighting nervous exhaustion, fatigue, irritability and insomnia

- Do you suffer from headaches, muscle, back or joint pain?
- Do you suffer from IBS, Crohn's disease or diverticulitis?
- Do you suffer from hives, eczema or psoriasis?
- Do you suffer from asthma, bronchitis, seasonal allergies or hay-fever?
- Do you suffer from an auto-immune condition such as multiple sclerosis, inflammatory bowel disease, rheumatoid arthritis?
- Do you suffer from food allergies, chronic infections or frequent illness?

Chapter 4: Reducing Inflammation

Inflammation is an underlying factor behind an endless number of diseases. These include inflammatory conditions of the skin (psoriasis, eczema), gastrointestinal tract (Crohn's disease or diverticulitis) and musculoskeletal system (back or joint pain), to name a few.

A certain degree of inflammation is healthy and is a necessary component of the immune-defense system. Tissue injury or distressed cells trigger an immune response. Specific immune cells help eliminate the infectious agents, trauma or other causes of damage and repairs the damaged cells and tissue.

When optimally balanced, your body provides enough immediate action to promote healing, then down regulates the response when the threat is gone. When immune imbalances occur, your body shifts toward a state of chronic inflammation. This may present as a minor headache, or as something more severe, such as arthritis.

Inflammation in the body not only manifests as pain and disease, it signals the HPA axis to release cortisol as an attempt to reduce that inflammation. If the inflammatory process persists, a vicious cycle is created involving constant activation of the immune and stress response systems by one another. Dietary and lifestyle considerations can shift the body from a pro-inflammatory to a balanced and non-inflamed state. This will help reduce the inflammatory fire as well as aid in reducing the overall burden on your stress response system.

Dietary and Lifestyle Recommendations to Help You Take Control of Inflammation

1. Reduce the consumption of inflammatory foods. Foods that promote inflammation include red meat, processed meats (salami, hot dogs), fast food, deep fried foods, sweets (cookies, cakes) and other refined and heavily processed foods. Instead, opt for whole foods in their unadulterated form (such as fruits, veggies, nuts and seeds).

2. Avoid or reduce the consumption of common food allergens. Allergenic foods create a hyper-responsive immune system that drives inflammation. Allergenic foods include wheat (gluten), dairy, corn and corn byproducts (high fructose corn syrup). Testing for food allergies will provide you and your doctor identify specific foods to which you are allergic.

3. Maintain healthy vitamin D levels. Your body synthesizes bioactive vitamin D when it is exposed to natural sunlight. Supplementing with vitamin D3 will also help you maintain a healthy blood level of vitamin D, which helps reduce inflammation and boost the immune system.

4. Add anti-inflammatory herbs and spices to your meals. There are numerous herbs and spices that contain naturally occurring anti-inflammatory components. For example, the spice turmeric is known for its strong anti-inflammatory activity. Other anti-inflammatory herbs and spices include ginger root, garlic, basil, parsley, rosemary, curry, cayenne peppers/chilies, thyme, oregano, cinnamon, cloves and mint.

5. Increase your intake of omega-3 fatty acids. Omega-3 fatty acids, particularly the EPA (eicosapentaenoic acid) component of omega-3s, significantly reduce inflammation in the body. A high-quality fish oil or flax seed oil supplement is an excellent concentrated source of omega-3s. Foods high in omega-3 fatty acids include salmon, mackerel, tuna, herring and sardines. Excellent vegetarian sources of omega-3 fatty acids include ground flax seeds, chia seeds, hemp seeds, sesame seeds, soybeans, walnuts and Brussels sprouts.

6. Maintain gastrointestinal health. Chronic inflammation often originates in the GI tract. Avoiding food allergens and supplementing with digestive enzymes and probiotics will boost GI health. Consuming foods high in fiber, as well as omega-3 fatty acids, will also help heal the gut.

7. Eat more raw foods. This includes sprouted and fresh, locally grown, preferably organic foods. Fresh foods, such as fruits, vegetables, sprouts and greens, contain a high level of vitamins and enzymes that aid in reducing inflammation.

8. Eat colorful fruits and vegetables. The rich color in fruits and vegetables, such as the blue in blueberries and the red in strawberries, are naturally occurring antioxidants. Increasing your intake of colorful fruits and vegetables will naturally boost your antioxidant levels, resulting in a reduction in free- radical damage and inflammation throughout the body.

9. Stay in shape. Fat cells in your body produce and secrete inflammatory compounds. Abdominal fat cells produce and secrete these compounds at even higher levels, resulting in a strong inflammatory response for those that have accumulated extra belly fat. Engaging in regular, cardiovascular activity (at least four days per week) can help you burn extra fat and reverse this inflammatory process.

10. Get adequate amounts of sleep. Disruption of normal sleep can lead to daytime elevation in pro-inflammatory molecules. Aim for seven to eight hours of sleep each night. If you are suffering from insomnia, please follow the recommendations outlined in Chapter 3 to improve your sleep cycle and reduce inflammation.

11. Avoid toxin exposure as much as possible. This includes smoking, environmental pollution, unfiltered water, cosmetic products, lotions, and household cleaning items that contain unnatural ingredients and harmful chemicals. Reading labels on skin care products is as important to your health as reading food labels. Using natural, organic skin care products, cosmetics, detergents, and cleaning products will significantly reduce your exposure to harmful, pro-inflammatory and often carcinogenic chemicals.

When indications of chronic inflammation are present, supplementing with natural products will provide a significant boost to reversing inflammation.

Vitamins and Herbs that Help Reverse Inflammation

Bromelain	• Natural protein-digesting enzyme from the pineapple plant • Helps alleviate pain and swelling, and speeds healing • Shown to help arthritis, sinusitis, and cancer	240-500 mg/day
Green tea extract	• Reduces free radical damage and histamine release from cells	100-300 mg/day
Quercetin	• Flavonoid found in fruits and vegetables such grape skins, red onions, green tea and tomatoes • Inhibits inflammation and supports health of the epithelial barrier in the gut • Boosts the immune system and reduces allergic reactions	200-600 mg/day
Skullcap root	• Chinese herb and potent antioxidant • Reduces pro-inflammatory compounds in the body	200-600 mg/day
Turmeric (curcumin)	• Reduces inflammation throughout the body, particularly in the GI tract • Helps fight depression, support adrenal function, and destroy infectious microbes	600-1,200 mg/day
Vitamin D	• Tightens gap junctions in the intestinal lining, which creates a strong GI barrier that protects the body • Higher blood levels of vitamin D have been shown to enhance immune function and soothe tissues of the GI tract	1,000-10,000 IU per day

Stress and Thyroid Health

The hypothalamic-pituitary-axis (HPA) is the body's stress response system, the activation of your body's fight-or-flight response to help you quickly and efficiently respond to danger. Short-term activation of the HPA axis is a normal part of life. However, our bodies are not designed to withstand chronic activation of the HPA axis. As outlined in this handbook, long-term stress can cause a breakdown of both mental and physical health, including the inhibition of normal thyroid function.

Maintaining a healthy thyroid is crucial to overall health, as thyroid hormones can affect virtually all bodily functions. The HPA and hypothalamic-pituitary-thyroid (HPT) axis are intimately connected. High levels of cortisol, secondary to chronic stress, can cause the thyroid to slow down over time, resulting in less thyroid hormone production. When the body experiences too much stress, thyroid hormone production and metabolic rate decrease. This is the body's way of protecting itself from further breakdown—similar to pumping the brakes on a car speeding downhill. However, if elevated cortisol levels and low thyroid function are left unchecked, it can lead to a worsening of symptoms, including weight gain, fatigue, depression, hormone imbalances and menstrual cycle irregularities.

HPA axis and thyroid hormone imbalances often overlap, so it becomes even more important to thoroughly test both stress hormone (cortisol and DHEA) and thyroid hormone levels to see if one or both of these systems are not functioning properly. A disruption in one axis can affect the other system, which is why patients treated with thyroid hormone replacement therapy may feel their symptoms have not completely resolved. This may be due to an underlying dysfunction in the HPA axis affecting normal thyroid hormone production.

Common Symptoms Overlap Between HPA and HPT Axis Dysfunction

HPA Axis Dysfunction	HPT Axis Dysfunction
Fatigue	Difficulty losing weight
Depression	Low energy
Pain/inflammation	Pain
Disturbed sleep	Constipation
Hair loss	Hair loss
Poor memory/concentration	Mood, memory problems
Menstrual cycle irregularities	Menstrual cycle irregularities
Heart palpitations	Coarse, dry hair
Irritability	Puffiness around eyes/face

Conclusion

Stress is an important part of our daily lives. It is beneficial in assisting us to accomplish tasks more efficiently, as well as boost memory. It is also a vital warning system producing a "fight-or-flight" response. Identifying abundant key stressor(s) that are contributing to health decline are important in understanding how to adjust our lifestyle to manage those stressors. This could be as simple as eating a healthy breakfast or not skipping a meal. It could also mean further testing with your health care provider to see if you are experiencing inflammation from a treatable infection. Mental and emotional stress may cause other systems to become out of balance. On the converse, other body systems may be contributing to the overall stress burden.

As discussed throughout this handbook, the body has remarkable resilience and reserve that will buffer the effects of stress to prevent chronic disease. It is up to you to provide your body with the proper nutrients, environment and lifestyle for optimal health and stress management.

Notes

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