

Your Next Sixty Years



A Guide to Managing Your Health for Longevity

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Thank you!

Learn How To:

- Keep Your Brain Sharp
- Manage Your Hormones
- Avoid Weight Gain and Diabetes
- Maintain Energy Levels
- Build Muscle & Bones
- Resist Heart Disease & Cancer
- Keep a Healthy Sex Life
- Sleep Like a Baby
- Nurture Relationships & Avoid Maritalpause
- Utilize Vitamins & Supplements
- Live Long and Happily

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How to Use This Booklet

This informational booklet may be read in a variety of ways: for a thorough study, you may read it cover to cover; if you prefer a light reading, each section includes a convenient summary in a gray text box. Each section may also stand alone as a reference guide. If a word is unfamiliar, please consult the provided glossary of terms at the end of the document.

A separate section includes summaries and additional information on LexiLife Health Clinics with contact information. If the booklet does not address your concerns or interests, please contact us so we can assist you further in your journey to a Happy and Healthy Life into your Hundreds!

How Long will You Live?

How long will you live? As we age, this question becomes more significant. Perhaps a better question is how long we will be healthy and happy, not how long will we live. Many factors determine happiness, but from a medical perspective, the definition includes a life free of pain and disease and the ability to perform the functions and activities we enjoy.

Due to advancements in medicine and technology, longevity in the United States has increased significantly. On average, men and women in the United States live into their late 70's. However, many people spend the final years of their lives being treated for major illness. In fact, 70% of healthcare expenses are spent in the final three years of life. Studies also show that our health is declining: the typical 60-year-old American is not as healthy as current 70-year-olds were ten years ago. This suggests that unless we improve our health and lifestyle, longevity will decrease and disease will become common in our final years.

Luckily, medical advancements and the growing trend of preventative care are providing new avenues for healthy-minded patients, allowing them to live longer, happier and healthier lives than ever before. Today, there are more centenarians (people living to age 100 or more) than at any time in history. How do these people do it? Medical professionals once thought these people simply had good genes. It was believed that barring major accidents, these people were pre-programmed to live long lives. Discoveries from the human genome project have taught us differently. With proper preventative care and a healthy lifestyle and diet, we can control our own "gene expression", which to a large extent determines how long and how well we live. Nutrition, stress-management, an understanding of our own biochemistry and the optimization of biochemical markers within our bodies will allow us to live longer, healthier and happier lives.

Your "gene expression" can be controlled through diet, lifestyle and preventative care, allowing you to live a healthier and longer life.

Knowledge & Action

The Keys to Longevity

How does one live happily into their hundreds? What's the magic recipe? The answer is different for everyone but there are fundamental principles to guide us all:

- ⇒ Take charge of your own health: Modern medicine is structured to treat the ill and wounded. The key to longevity is staying well. Focus on disease prevention and health optimization regardless of age. This becomes more important as we grow older because often we neglect to care for ourselves in our youth.
- ⇒ Understand your body and brain: Most of us will never become doctors or nurses, but learning the functions of your body and brain at a basic level will help you optimize your health.
- ⇒ Learn how to eat correctly and find out which dietary supplements your body needs. Do not rely on what the FDA or supplement companies recommend for your average daily intake.
- ⇒ Sleep 7-9 hours per night.
- ⇒ Learn which of your biochemical markers are strong or weak and how to maintain or optimize them. These are major keys to staying young and healthy. We will discuss biochemical markers in more detail throughout this booklet.
- ⇒ Learn your family health history, which will help you understand the genetic influence on your health. A history of heart disease in your family means that you may have a genetic propensity for heart disease as well. It may be more difficult to prevent, but not impossible. Learn how to optimize your gene expression to prevent these diseases.
- ⇒ Use care providers that focus on disease prevention instead of disease treatment. The majority of medical practices still focus on disease treatment, so seek out healthy-aging practices that use state of the art analysis and prevention techniques and technology. Furthermore, find a medical practice with M.D.s that are willing to use both medical and alternative methods.

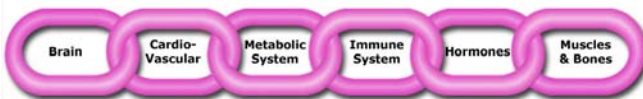
- ⇒ Your brain and body are integrally connected so they must function in a synchronized manner. You should treat these components together. For example, stress affects your brain, but it also negatively impacts the adrenal glands that create the fight-or-flight reflex. Alleviating stress will not only give you peace of mind, but will relax your muscles, improve your digestion and metabolism.
- ⇒ Natural therapy is typically better than synthetic. Synthetic hormones such as Premarin and Prempro double the risk of cancer¹ while bioidentical hormones are proving to be very safe. Natural/organic foods are better than processed foods. Read labels and learn to identify what is unhealthy. For example, high fructose corn syrup is a major contributor to weight gain and obesity. It is used in abundance in processed foods. Avoid it like the plague! Learn the side effects of medications (usually synthetic) and use natural alternatives whenever possible. Better yet, work with a doctor to naturally alleviate your symptoms so that you do not need the medications.
- ⇒ Stay mentally and physically active. Activities vary depending upon your lifestyle and condition, however, everyone needs mental stimulation and physical activity. Walking around the block is a good start. Crossword puzzles and games have proven to help keep your brain healthy.
- ⇒ Age does not cause disease and disease does not develop overnight. Diseases typically start small and get progressively worse over years if left unchecked. Your body has a tremendous disease fighting capacity if given a chance. Keep your immune and other major systems (cardiovascular, hormonal, brain, digestive, etc.) optimized so they can perform with maximum effect. To do this, measure, monitor and optimize biochemical markers. The tools for prevention and optimization are available for virtually every brain and body function. Team up with a qualified healthy-aging doctor, test your biomarkers, optimize them and take action!

Knowledge & Actions Highlights

- ⇒ Take charge of your own health.
- ⇒ Learn about your body and brain.
- ⇒ Learn to eat correctly & take the supplements you need.
- ⇒ Learn your family health history and how it effects you.
- ⇒ Use care providers that focus on disease prevention as well as disease treatment.
- ⇒ Learn how to synchronize your brain and body, for they are integrally connected.
- ⇒ Get treated with bioidentical hormones—not synthetics.
- ⇒ Stay mentally and physically active.
- ⇒ Age does not cause disease and you don't become diseased overnight. Optimize your immune system.

The Weak Link Approach

Think of your brain and body as a chain of six major systems linked together. Although this is a simplification, it illustrates that your systems are integrally connected with a multitude of biochemical functions. As an example, The hormones and neurotransmitters in your brain are your messaging systems. They effect every organ in your entire body.



You will live only as long as the weakest link holds together. Most people focus on a few links and pay little attention to the rest. To live a long and healthy life, you must maintain all six links. Due to the inherent connectivity among systems, the strengthening of one link also strengthens other links. The reverse is also true; weaken a link and the others weaken with it.

Unfortunately, today's medicine has taken a specialized approach and there are more specialized physicians than ever. They do a fine job treating specific disease-oriented conditions, but they typically do not take a "big picture" approach. This creates a great need for Healthy-Aging Clinics. In this booklet, you will discover the interconnection between systems and the need to address them all. Although specific treatment approaches will be used, a good Healthy-Aging physician performs treatments within a global health approach that encompasses all six systems. With your physician, identify symptoms, define needs, design a short-term treatment program to address weaknesses and a long-term program with multiple therapies to continuously strengthen your health chain.

Weak Link Approach Highlights

- ⇒ Your brain and body's primary systems can be viewed as a six link chain.
- ⇒ You will only live as long as the weakest link holds together.
- ⇒ A weak link weakens other links; strong links strengthen others.
- ⇒ Modern medicine uses specialists to treat disease. You also need a Healthy-Aging physician that practices disease prevention and health optimization for a long, happy life.

All the Biochemistry You Need to Know

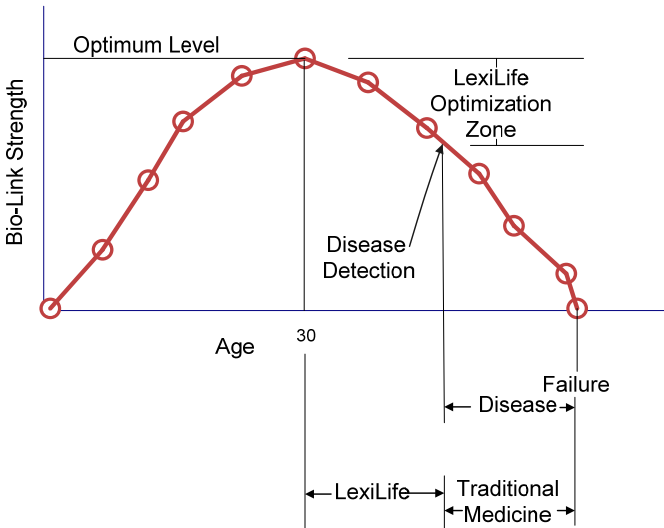
Biochemistry is the study of chemical processes in living organisms. It examines the structure and function of cellular components such as proteins, carbohydrates, lipids, and nucleic acids (genes). When biochemical processes occur, they do so in a specific sequence of events or chain reactions known as pathways. For example, cholesterol converts to pregnenolone which in turn converts to progesterone. Progesterone is then used to make estrogens and testosterone.

Laboratory testing is now available to assess the quantity of chemicals in our brains and bodies. The important chemicals that interest medical professionals are often called biochemical markers, or simply "biomarkers." Examples of biomarkers include hormones such as estrogens, testosterone, thyroid and cortisol; vitamins, minerals, cardiovascular markers such as LDLs, HDLs and cholesterol.

The natural production of biomarkers typically follows a profile as shown in diagram A. Biomarker concentrations typically increase until about age 30, then start to decline with age. It is the decline of biomarkers that cause disease, not age itself. If you are able to maintain optimum biomarker levels, your chronological age does not reflect your expected life span; your biomarkers are far better indicators.

BioMarker Profile

(Diagram A)



Traditional physicians usually do not treat patients until their biomarkers reach a pre-determined level. When the patient's biomarkers decline to this level, the patient is at risk of disease or already has an illness. This is too late! Healthy-Aging professionals treat patients before their biomarkers significantly decline (typically with natural methods) to re-establish levels at or near optimum levels.

BioMarker Highlights

- ⇒ Biochemistry is the study of chemical processes in the living organism.
- ⇒ Important chemicals in your brain and body are called biomarkers or chemical markers and can be tested in labs.
- ⇒ Biomarker levels typically optimize around age 30 and start to decline thereafter. This natural progression can be altered.
- ⇒ Most physicians do not treat declining biomarkers until they reach a disease-state level.
- ⇒ Healthy-Aging physicians continually try to optimize biomarkers.

Keeping Your Brain Sharp

Do you feel like your brain is slowing? Do you forget things like names or what you did two days ago? Is it difficult to concentrate? Or does your brain race constantly, often keeping you awake late into the night? These are common symptoms associated with age and/or stress.

Mental functions are controlled through four biomarkers called "neurotransmitters," which define your nature or personality. Since they are biochemicals, they can fluctuate with changes in lifestyle, nutrition, exercise, disease and stress. As your brain controls all bodily functions including hormones, the immune system, the cardiovascular system, digestion and all organ functions, it is vital to balance your neurotransmitters. With age, neurotransmitters tend to change which can inhibit bodily functions. With proper testing and optimization, you can "sharpen" your brain.

Everyone is born with a dominant neurotransmitter which in part defines their nature. Deficiency of the dominant neurotransmitter is more severe than deficiencies in less dominant neurotransmitters.

Dopamine – Dopamine-dominant individuals have a "high voltage" nature, capable of deep thought.² They react quickly to mental challenges. Dopamine deficiency can lead to blues, hypertension, and fatigue. People with multiple sclerosis, schizophrenia, cocaine or alcohol abuse often have severe dopamine deficiencies. However, minor dopamine deficiencies are common with age and sub-optimal lifestyles. Inability to concentrate, declining problem-solving skills, planning or knowledge-retention loss are all signs of dopamine deficiency. Since dopamine is an early stage component on the endorphin pathway, dopamine deficiency often leads to low sexual desire or low libido.

Acetylcholine - Acetylcholine-dominant individuals have very fast electrical circuits in the brain. These people tend to be adept at working with their senses, are highly creative and open to new ideas³. Acetylcholine deficient people who lose brain speed, may have attention deficit disorder, bipolar disorder and in extreme cases, Alzheimer's disease. Having excessive neurotransmitter quantities is also possible and can be equally as troublesome. For example, people with excess acetylcholine cannot slow their brain thoughts down. As a result, their brains race day and night from thought to thought.

GABA - Gamma-aminobutyric acid (GABA) controls the brain's rhythm. Therefore, GABA dominant people are usually very stable, reasonable and grounded.⁴ People with excess GABA often expend tremendous resources providing care to others with little regard for themselves. With too little GABA, one may become anxious. If left unchecked, severe GABA deficient people may experience severe pain, heart arrhythmias, or drug and alcohol abuse.

Serotonin - Serotonin synchronizes all brain functions.⁵ Serotonin-dominant people have a very playful nature. They thrive off short term rewards and are usually the life of any party. Serotonin affects your ability to rest, regenerate and find serenity. Serotonin deficiencies can induce irritability, delayed sexual response or orgasm, insomnia and bingeing, addiction of any kind or major depression.

The most common practice for treating neurotransmitter imbalances is the prescription of medication. Although effective for treating symptoms such as depression, anxiety or sleep disorders, these medications do not bring the neurotransmitters back into balance via natural methods. Frequently, doctors prescribe medications that block biochemical pathways from taking their natural course. These medications may alleviate the depression or anxiety symptoms but have undesirable side effects which can potentially create long-term damage to biochemical functions. Examples of these over-prescribed medications are Wellbutrin, Effexor, Xanax, Ambien and Klonopin.

If medications are not the answer, how does one optimize brain function? The first step is determining which neurotransmitter is dominant and which are deficient. This can be done with written tests or with electrical brain studies. When the patient's neurotransmitter status is revealed, it can be enhanced, typically with natural methods including diet, exercise, lifestyle changes, hormones and supplementation.

Enhancing Your Brain with Diet

The news surrounding cholesterol and its deleterious effects has done a disservice to brain function. The rash of low cholesterol diets has removed many food sources that are necessary for a healthy brain— especially amino acids from protein sources such as red meat. Our brains need amino acids to be healthy along with a variety of other nutrients, vitamins and minerals. The removal of red meat from our diets to reduce cholesterol starves our brains of the nutrients needed to support neurotransmitters. We must balance lowering cholesterol and brain health. To do this, eat alternative sources of amino acids and fats and supplement, where necessary, with dietary supplements tailored to your particular needs. Also address the true source of elevated cholesterol—the excessive consumption of saturated fats and the body's inability to properly metabolize cholesterol. Please see the metabolic section in this booklet for more information.

The Standard American Diet (SAD) is typically high in calories, saturated fats and chemical preservatives which impede proper digestion and provide inadequate nutrition to support healthy brain function. Since most neurotransmitter chemicals are made as a result of digestion which takes place outside of our brains, the SAD is almost guaranteed to deprive our brains of the nutrients it needs. Remember: Too much is as dangerous as too little! Work with your healthcare provider to develop a diet that effectively balances your neurotransmitters.

Foods that Enhance Your Brain

The following is a partial list of foods that may enhance neurotransmitters:

Dopamine: Chicken, duck, granola, low-fat cheeses, oat flakes, pork, ricotta, soy beans, turkey, walnuts, wild game, yogurt.⁶

Acetylcholine: Almonds, artichokes, beef, broccoli, Brussels sprouts, cabbage, cod, salmon, tilapia, liver (chicken, turkey), oat bran, tomato paste.⁷

GABA: Almonds, banana, broccoli, brown rice, halibut, lentils, oats, potato, walnuts, whole wheat.⁸

Serotonin: Avocado, chicken, cottage cheese, duck, granola, oat flakes, turkey, wheat germ, wild game, yogurt.⁹

Lifestyle Changes for a Healthy Brain

Lifestyle is key to a balanced brain. Without exception, aerobic exercise is healthy for all four major neurotransmitters. Studies have proven that regular exercise increases the amount of all major neurotransmitters.¹⁰ Exercise has a calming effect that improves sleep and blood flow to the brain. Avoid alcohol in excess (no more than two drinks three times per week).

Dopamine Lifestyle Changes: Dopamine-dominant people typically have high energy lifestyles and often use more dopamine than they can produce. High energy often creates high stress, which over time, can leave a feeling of "burn out." To increase and preserve dopamine, one should take relaxing vacations, exercise, take breaks at work and practice deep breathing and relaxation. Set aside at least a half hour each day dedicated to relaxation.¹¹

Acetylcholine Lifestyle Changes: Since Acetylcholine-dominant individuals are constantly interacting with people and coming up with new ideas, they often continuously “churn,” which cannot last indefinitely. To enhance acetylcholine, spend some time alone in a relaxing environment. Do something enjoyable that requires little planning. Get lost in your environment and minimize thinking. Exercise regularly¹².

GABA Lifestyle Changes: GABA people tend to do things for others, often becoming inattentive to their own needs. To enhance GABA, deliberately pamper yourself. Take time to play. In the long run, this will help you assist others. Exercise is especially rewarding and beneficial to GABA dominant types.¹³

Serotonin Lifestyle Changes: Playful serotonin people need to focus on planning for tomorrow. It is helpful for serotonin people to realize that future plans will only make them stronger. Additionally, exercise helps serotonin-dominant people reset their brains in a fashion similar to sleep.¹⁴

Hormones and Your Brain

Hormones play a major role in virtually every function in the body, but they are especially important for the brain. This is why changes in hormone levels during menopause and its male counterpart, andropause, can create anxiety, depression and sleep disorders. As we age, our hormones naturally decline. Though most people think of sex hormones such as estrogen and testosterone, our brain uses and controls a multitude of hormones.

Each of the four major neurotransmitters has at least one hormone with which it is associated. When these hormones become depleted, the brain cannot function properly. Although these hormones are important for overall body functions, one must understand that the brain controls the production and use of these hormones while simultaneously consuming them. It is vital that we maintain adequate hormone levels, as they are very important and very powerful. As such, they should only be prescribed by qualified physicians.

Dopamine Related Hormones

When a biochemical becomes deficient, the body often produces hormones to replace it. For example, "the body naturally increases cortisol production when there is a dopamine imbalance."¹⁵ Individuals with high levels of dopamine will notice these depletions more than others.

Hormone ¹⁶	Function
Calcitonin	Builds Bones
Testosterone	Sex Drive
DHEA	Energy & production of other hormones
HGH	Builds muscles and bones
Thyroid	Increases concentration
Estrogen	Maintains skin, teeth and circulation
Cortisol	Replenishes hormones under stress
Insulin	Controls sugar metabolism

Acetylcholine Related Hormones

The hormones listed below are required for everyone, but acetylcholine natures use these more rapidly.

Hormone ¹⁷	Function
Estrogen	Appetite control
Vasopressin	Balances fluids
DHEA	Lethargy
HGH	Memory loss & muscle loss
Thyroid, estrogen, calcitonin	Prevent Osteoporosis

GABA Related Hormones

Stable, friendly GABA people rely on hormones to keep them that way. When depleted, they can encounter wide-ranging mood swings. Progesterone is important to us all, but especially important to GABA-dominant individuals. Depleted levels are associated with depression, low libido, weight gain, diabetes, osteoporosis and inefficient immune systems. Pregnenolone has a calming effect and is a precursor to DHEA.¹⁸

Serotonin Related Hormones

Normally playful in nature, serotonin-dominant people experience significant changes when their hormones are depleted. Dopamine and acetylcholine can be thought of as our "on switches" that induce thinking and memory; on the other hand, GABA and Serotonin are our "off switches" that calm us down and help us sleep. It is not surprising that many of the hormones necessary for GABA-dominant people are also required for serotonin-dominant people.¹⁹

<u>Hormone</u>	<u>Function</u>
Progesterone	Natural antidepressant, weight gain, balances PMS, anxiety, insomnia
Adenosine	Calms heart rhythm
Leptin	Decreases appetite

Brain Sharpening Highlights

- ⇒ Mental functions are controlled through four primary brain chemicals called neurotransmitters.
- ⇒ The neurotransmitters are dopamine, acetylcholine, GABA and serotonin.
- ⇒ Since the brain controls all body functions including hormones, immune system, metabolism and cardiovascular system, neurotransmitters must be balanced.
- ⇒ Dopamine controls voltage and deep thought.
- ⇒ Acetylcholine controls brain speed and memory.
- ⇒ GABA controls brain rhythm and mood stabilization.
- ⇒ Serotonin synchronizes brain waves and creates a playful nature.
- ⇒ Diets are important in balancing neurotransmitters. Low cholesterol diets rob neurotransmitters of necessary nutrients. The Standard American Diet (SAD) of high calories and preservatives impedes proper digestion and neurotransmitter development. Eat neurotransmitter-enhancing foods.
- ⇒ Lifestyle also effects neurotransmitters. Test for your dominant nature and adjust your lifestyle to its needs.
- ⇒ Hormones are integral to brain function. Each neurotransmitter is dependent upon its own set of hormones. Optimize your hormones for good brain health.

Managing Your Hormones

"It is impossible to achieve optimum health without a properly functioning hormonal system."

-David Brownstein, M.D.
The Miracle of Natural Hormones

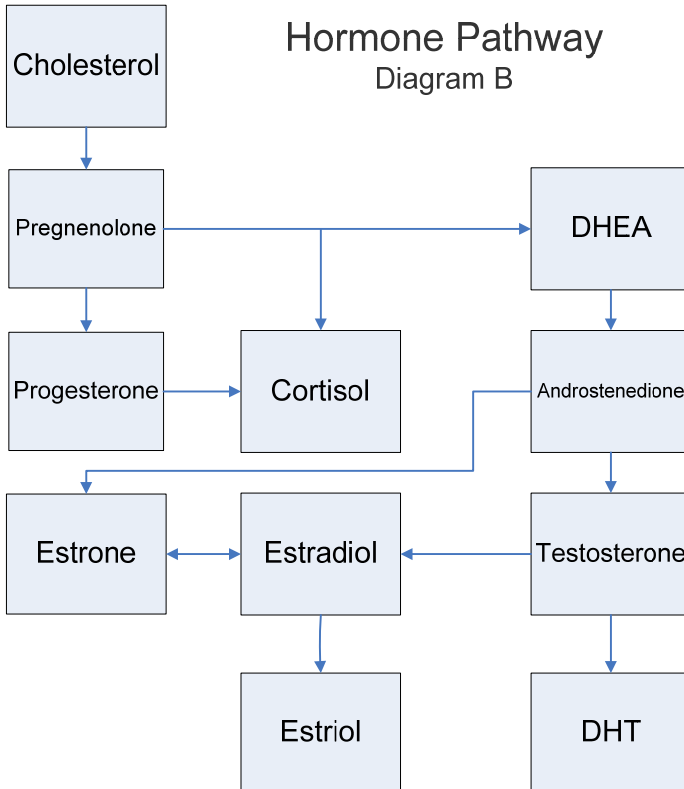
Most women are familiar with the physical and emotional aspects of hormones. However, until recently, even medical experts did not have a thorough understanding of the hormonal impact on women and men with age. We have recently gained significant insight into menopause and its male counterpart, andropause. Through continued research and new therapies, we now know that hormone imbalance not only creates symptoms like mood swings, hot flashes, and skin changes, but also impacts major brain and body functions such as cardiovascular, immune, and metabolic systems. The management of estrogens, progesterone, testosterone, human growth hormone, insulin, cortisol, melatonin, thyroid and other hormones is vital to healthy aging. They must be balanced and optimized for optimal health. Hormones control our ability to fight disease and failing to manage hormones may lead to cancer, heart attacks, osteoporosis, stroke, diabetes and other "diseases of aging."

Hormone replacement therapy has worked wonders for many women. Although the Women's Health Initiative linked hormone therapy to an increased risk of cancer, it did not differentiate between synthetic and bioidentical hormones. The National Institute of Health recently concluded that Prempro and Premarin, the most popular synthetic hormones, increase the risk of cancer¹. On the other hand, studies in the United States and Europe are continuing to conclude that bioidentical hormones are safe and effective for treating depletions. Once hormones are properly tested and levels are shown to be insufficient, bioidentical hormones offer the safest course of treatment.

Hormone Pathways

Both male and female hormones are produced from the same pathway (Diagram B).

Notice that sex hormones start as cholesterol, are converted to pregnenolone and DHEA, and then become cortisol and progesterone. Estrogens and testosterone are then made from androstenedione. It is vital that every step of the hormone pathway remain balanced. Any hormone can become depleted and once it does, a chain reaction often occurs among the related hormones.



For example, the body responds to stress with cortisol from the adrenal glands. The overproduction of cortisol often “steals” the upstream hormones such as pregnenolone and progesterone, creating deficiencies. A number of adverse symptoms are associated with progesterone depletion including sleep deprivation and disrupted menstrual cycles.

Excess cortisol also “steals” from the downstream hormones. DHEA is often under-produced which can create low levels of androstenedione, estrogens and testosterone. In other words, stress may disrupt your body’s balance of sex hormones.

In addition, there is a strong link between testosterone and estrogens, which are vital to both men and women. Testosterone is the predominant sex hormone in men. As they age, men naturally produce less testosterone in their testes. Carrying excess fat tends to convert testosterone to estrogen (primarily E2) which “feminizes” men.

Thousands of articles demonize cholesterol, demonstrating its role in cardiovascular disease. There is, however, little discussion of its essential role in producing sex hormones. As Diagram B shows, driving cholesterol to very low levels can have negative effects.

Studies also show that hormone levels decline naturally with age. A recent study from Harvard Medical School found that most men over the age of 50 were testosterone deficient.²¹ The study also concluded that bioidentical testosterone replacement therapy did not increase cancer risk in males and is a highly effective treatment for hypogonadism.²²

Female Hormones

The hormone pathway is similar in males and females, however hormone concentrations are very different in women and men. Each hormone is covered separately below.

Estrogen

Estrogen performs over 400 functions in the female body and also performs many useful functions in men.²³ As the predominant sex hormone in women, it has far-reaching effects on almost every major function in the body and brain. The female body has estrogen receptors on cells almost everywhere including the brain, gut, muscles, bones, heart, lungs, sex organs and blood vessels. Due to its prevalence, it is essential for optimal health. In women, estrogen:²⁴

- ⇒ Stimulates enzymes that prevent Alzheimer's disease
- ⇒ Increases the metabolic rate
- ⇒ Improves insulin sensitivity and therefore helps prevent weight gain, Metabolic Syndrome and Type II diabetes
- ⇒ Increases blood flow
- ⇒ Decreases blood pressure
- ⇒ Maintains collagen in skin
- ⇒ Decreases LDL (bad cholesterol) & increases HDL (good)
- ⇒ Helps memory, mood, and concentration
- ⇒ Decreases risk of colon cancer
- ⇒ Aids in the formation of serotonin
- ⇒ Maintains bone density
- ⇒ Reduces the risk of heart disease by 40% to 50%
- ⇒ Increases sexual interest

Estrogens do much more than assist in sexual function and reproduction; they are vital to optimal health. It is necessary that estrogen levels be maintained at all times, especially after menopause.

In the ten years before menopause, women typically lose estrogen. When estrogens are deficient, women often experience night sweats, hot flashes, low libido, thinner skin, wrinkles, increased insulin resistance, weight gain, decreased memory, increased cholesterol and/or vaginal dryness.

Some women have an excess of estrogen. They experience water retention, headaches, poor sleep, panic attacks, swollen breasts, increased breast cancer risk, increased auto-immune disease risk, fatigue and/or mood swings.²⁴

Estrone (E1), Estradiol (E2), Estriol (E3)

Before menopause, female ovaries, adrenal glands, liver and fat combine to produce estrone (E1). Before menopause estrone is converted to estradiol (E2) in the ovaries. After menopause, E1 is the predominant estrogen females produce. High levels of estrone stimulate breast and uterine tissue and may lead to breast and uterine cancer. After the ovaries stop working during menopause, little E1 is converted to E2. During this period, E1 is primarily produced by fat tissue with small amounts originating in the liver and adrenal glands. Excess weight increases the production of E1 as well as the ratio between E1 and E2. Regular alcohol consumption decreases the ovarian hormone production of E2.²⁵

E2 is twelve times stronger than E1 and eighty times stronger than estriol (E3).²⁶ Before menopause, E2 is produced primarily in the ovaries and after menopause, many women still produce some E2. Because of its potency, it is the primary contributor to the positive body functions described previously.²⁷

Estriol (E3) has a smaller impact on the female breast and uterine tissue than E1 and E2 and does not promote breast cancer. In fact, studies have shown that it is cancer protective. However, it does not have the bone, heart and brain protection characteristics of E2. E3 provides the following functions:²⁸

- ⇒ Controls symptoms of menopause (hot flashes, insomnia, etc.)
- ⇒ Helps the gastro-intestinal (GI) tract
- ⇒ Decreases recurrences in some breast cancers
- ⇒ Blocks E1 by occupying estrogen receptors in breast tissue

Estrogen Metabolism

Although estrogen amounts are important, the metabolism of estrogen (breaking down) is also very important. Studies show that estrogen metabolism plays a major role in osteoporosis, auto-immune diseases and cancer. Estrone (E1) is metabolized into three pathways that yield 2-hydroxyestrone, 4-hydroxyestrone and 16-hydroxyestrone.²⁸

2-hydroxyestrone is “good” estrogen. It does not stimulate the cellular division that causes DNA damage, which may cause cell mutation and tumor growth. When these molecules occupy cell receptor sites, they block potentially cancer-causing estrogens from attaching to the cells and causing mutations.²⁹

Conversely, 16-hydroxyestrone is a very powerful and active metabolite that stimulates growth. Its stimulating effect causes cells to multiply rapidly and mutate and is viewed as a breast cancer stimulant. Recent studies have shown that low 2/16 hydroxyestrone ratios are associated with breast cancer.³⁰

4-hydroxyestrone may also contribute to cancer. It may damage DNA by causing breaks in the DNA strands. This molecule also converts to metabolites that react with DNA and cause mutations.³¹

The key to optimizing estrogen metabolism is an increase in the 2/16 hydroxyestrone ratio by increasing the levels of 2-hydroxyestrone. When these levels are high, the ratios stay high and more cell receptor sites are occupied by the 2-hydroxyestrone, leaving fewer sites for the 4 & 16-hydroxyestrones. To do this, one must:

- ⇒ Exercise
- ⇒ Eat cruciferous vegetables
- ⇒ Supplement with fish oil, soy, kudzu, Indole-3-carbinol and vitamin B complex
- ⇒ Eat a high protein diet
- ⇒ Reduce body fat
- ⇒ Use bioidentical replacement therapy

Progesterone

Progesterone is the third steroid hormone produced in the sex hormone pathway. Pregnenolone is produced from cholesterol, then converted to progesterone.

Progesterone is important for men and women. In pre-menopausal women, it works in harmony with estrogens to manage menstrual cycles and plays an essential role in pregnancy. In men, it holds serum levels of estradiol low, which may reduce risk of myocardial infarction (heart attacks) and prostate cancer. Additionally, it reduces the hormone DHT which causes male pattern baldness.³² It also has been shown to prevent excessive fluid retention and high blood pressure (hypertension) in both men and women. It has a soothing effect on the body as it calms down nerves and muscles and induces sleep. It also helps produce GABA which calms the body as well.

Progesterone also:³³

- ⇒ Balances estrogens in men and women
- ⇒ Lowers cholesterol
- ⇒ Reduces fat
- ⇒ Protects against breast & uterine cancer in women and prostate cancer in men
- ⇒ Reduces the risk of heart disease in men and women
- ⇒ Normalizes libido
- ⇒ Balances fluids in cells
- ⇒ Acts as a natural antidepressant
- ⇒ Increases metabolism

DHEA

DHEA is often referred to as the “Mother of All Hormones” because it is the most abundant steroid in humans. It is the hormone from which testosterone and estrogens are made. DHEA is primarily produced by the adrenal glands and a small amount is produced by the brain and skin. DHEA declines naturally around age 30. At 70, only about 25% is produced.³⁴

DHEA can:³⁵

- ⇒ Decrease cholesterol
- ⇒ Decrease fat
- ⇒ Promote weight loss
- ⇒ Support the immune system
- ⇒ Decrease allergic reactions
- ⇒ Prevent blood clots
- ⇒ Increase bone growth

Testosterone

Although testosterone is the predominant sex hormone in men, it plays an important role in women. In women, testosterone is produced in the adrenal glands and ovaries. With age, the ovaries become less active and less testosterone is produced.³⁶

In women, testosterone:³⁷

- ⇒ Increases sexual interest
- ⇒ Increase a sense of well being
- ⇒ Helps maintain memory
- ⇒ Increases muscle and bone
- ⇒ Decreases body fat
- ⇒ Acts as an antidepressant

As women and men age, levels of testosterone typically decline. Other causes of testosterone loss include menopause, childbirth, chemotherapy, stress, the use of birth control pills and cholesterol-lowering medications.

Cortisol

Cortisol is a stress-response hormone produced in the adrenal glands. It is the only hormone that naturally increases with age. A variety of conditions can increase cortisol production including mental stress, emotional stress, physical exertion, infection, medications, poor diet, excess caffeine, lack of sleep and wound healing.

When cortisol is produced in response to stress, it can significantly impact other hormones and cause a variety of conditions as listed below. If not treated, a condition called "adrenal fatigue" can arise (see adrenal fatigue in the energy section).

Cortisol functions to:

- ⇒ Balance blood sugar
- ⇒ Stress reaction
- ⇒ Sleep
- ⇒ Mood and thoughts
- ⇒ Thyroid influence
- ⇒ Influence testosterone/estrogen ratios

Insulin

Insulin regulates glucose (blood sugar). Your body can become unresponsive to insulin through a variety of adverse conditions including poor diet, imbalanced hormones, lack of exercise, or obesity. When insulin resistance occurs, blood sugar rises and can lead to Type II diabetes.

Along with insulin and cortisol, DHEA, thyroid, progesterone and estrogens properly control glucose levels. As examples, E2 improves the body's sensitivity to insulin, thus making it more effective in controlling glucose. Insulin increases the fat-to-muscle ratio, so elevated insulin due to insulin resistance increases fat and reduces fat burning.³⁹

Thyroid

Your thyroid is the body's thermostat, controlling energy and heat production. It aids in growth, cellular energy, and also modulates carbohydrate, protein and fat metabolism. It assists in digestion, blood flow, hormone excretion, sexual function and oxygen management.⁴⁰

The thyroid must work cohesively with estrogens and testosterone produced in the ovaries before menopause. Thyroid hormone receptors are found in the ovaries and estrogen receptors are found in the thyroid gland. Menopause has a significant impact on thyroid function.

TSH (Thyroid Stimulating Hormone) induces thyroid hormone production, which creates thyroxine (T4). Thyroxine (T4) is a very concentrated form of thyroid. T4 is then converted to triiodothyronine (T3), a more active but less concentrated form of thyroid. The body also makes T2 which increases muscle and fat tissue metabolism. People that are hypothyroid (low thyroid), are often cold, experience metabolic issues, and have elevated cholesterol because T3 controls the amount of cholesterol removed from the body.⁴¹

Female Hormone Treatment Programs

The optimization and treatment of hormones require a delicate balance. Physicians practicing hormone replacement therapy must be well-qualified and individualize a course of treatment for each patient. There is no easy formula for optimizing hormone levels for a patient. A physician must assess the patient's symptoms and measure hormone levels in the blood, urine or saliva before determining a treatment process.

Using bioidentical hormone replacement therapy, (synthetic hormones like Prempro and Premarin have been proven to increase cancer risk) the physician prescribes the initial dose. It is vital that the patient and physician communicate so that the hormone therapy is monitored and titrated (adjusted) as necessary to achieve hormone optimization. Over a period of time, typically a few months, levels will stabilize and the patient can maintain a consistent dosage level. After this, the patient usually enters a maintenance program whereby the patient will visit the physician once every 6 to 12 months to assure treatment levels are correct.

Follow these guidelines and consider these facts if you are interested in female hormone therapy:

- ⇒ Synthetic estrogens and progesterone therapy have been proven to increase the risk of cancer, stroke, heart disease and blood clots.
- ⇒ Bioidentical hormone replacement does not increase the risk of disease associated with synthetic hormones.
Hormones are messaging systems in the brain and body. Because they are integrally linked together, hormone therapy MUST address all hormones, not only specific ones. For example, women that are insulin resistant often produce excess testosterone and have depleted DHEA levels, as their bodies convert DHEA to cortisol and testosterone.

- ⇒ BHRT needs to be customized for each individual. This is best achieved with an individually tailored hormone prescription called compounded hormone prescriptions.
- ⇒ The ratio of progesterone to estrogen is vital for good health and may actually be as important as the level of each. Low ratios can lead to infertility, increased breast and uterine cancer risk. High ratios may lead to insulin resistance and diabetes, fatigue, depression and a decrease in libido. These ratios must be carefully managed and stay within a healthy range.
- ⇒ Managing estrogen metabolism is vital to good health. The ratio of 2 to 16 hydroxyestrone must be followed to minimize cancer risk.

Female Hormone Highlights

- ⇒ Hormones are your messengers throughout your body & brain. They impact every function.
- ⇒ Hormones decline after age 30 and dramatically decline with menopause & andropause.
- ⇒ Estrogens including estrone, estradiol and estriol are the dominant female hormones performing over 400 functions.
- ⇒ Bioidentical hormones are preferred over cancer causing synthetic hormones. Synthetics include Premarin & Prempro.
- ⇒ Estrogen metabolite ratios must be balanced to reduce cancer risk.
- ⇒ Progesterone is vitally important for pre- and post-menopausal women and all men.
- ⇒ Testosterone maintains sex drive in women and men.
- ⇒ Cortisol is the stress response hormone.
- ⇒ Insulin is a hormone that regulates glucose or blood sugar. Inadequate care may lead to a condition called insulin resistance.
- ⇒ Thyroid hormones control your energy & heat expenditures.
- ⇒ Hormones can be highly influenced by diet and lifestyle. Optimal diet and lifestyle choices improve hormones.

Male Hormones

Male hormones are managed much like female hormones; they are integrally connected. However, females produce estrogens as their dominant sex hormones while males produce testosterone. Excluding these primary differences, other hormones including pregnenolone, cortisol, insulin, and thyroid work in similar ways in both females and males. For information on these hormones, please refer to the descriptions in the “female hormone” section.

Testosterone

Testosterone is the predominant male sex hormone produced in the testicles. It promotes libido, sexual desire, and stimulates sperm production and organ growth. It also promotes muscle and bone growth by facilitating the use of proteins and promotes the health of the male urinary and reproductive systems. It improves the cardiovascular system, protects against obesity and diabetes, and improves brain function.⁴²

Men over 30 lose testosterone which may lead to hypogonadism. Symptoms of hypogonadism include loss of sex drive, erectile dysfunction, fatigue, irritability, increased aches and pains, declining cognitive function and depression. The loss of testosterone is often coupled with an increase in sex hormone-binding globulin which binds to the testosterone molecules. This reduces the amount of testosterone available for tissue-building and performing essential functions. This condition is known as andropause—the male counterpart of menopause.

Andropausal men that gain abdominal fat also convert their testosterone to estrogen (E2). A chemical called aromatase, stored in body fat, metabolizes testosterone to estrogen. This has two effects. First, there is less testosterone available to perform male functions. Second, the estrogen has a feminizing effect. Studies also show that excess estrogen produced by aromatase leads to an increase in prostate cancer.⁴³

DHT

Dihydrotestosterone (DHT) is a metabolite of testosterone created primarily in the prostate gland, testes, hair and adrenal glands. It is three times more potent than testosterone and can cause male pattern baldness and prostate problems. It functions to reduce estrogen effects in men and impacts muscle growth and sex drive. Although there are multiple products to regulate DHT available today to control male pattern baldness, the efficacy of these products is still unproven.

Human Growth Hormone

Human Growth Hormone (HGH) stimulates cell growth and cell reproduction in humans and declines as we age. Research has shown that HGH helps to increase muscle mass, decrease body fat, increase bone density, increase energy, improve skin tone and improve immune system function.

Human Growth Hormone has had negative press as a performance enhancing agent for athletes. In most cases, athletes have exceeded normal physiologic levels to increase performance. These levels are outside the recommended therapeutic levels that are considered safe.

Because HGH enhances cell growth, including cancerous cells, it must be very carefully administered by physicians and should only be used for patients that have a low risk of cancer and have test results that indicate low levels of HGH. HGH replacement therapy is also very expensive. An alternative is enhancing HGH through diet, exercise, and lifestyle changes.

Male Hormone Treatment Programs

Testosterone, DHT and HGH treatments may be administered using bioidentical hormone therapies (BHRT) or when levels are not significantly depleted, through diet and lifestyle changes. These three hormones are only part of the complex web that includes insulin, cortisol, pregnenolone, progesterone, and DHEA. It is vital that hormone treatments address all male hormones and be performed by an experienced anti-aging physician.

Consider the following points when using Male Hormone Treatment Programs:

- ⇒ Hormones are a message system in the brain and body. They are integrally linked, so hormone therapy **MUST** address all hormones and not individual hormones.
- ⇒ BHRT should be customized for each individual. This is best performed with tailored hormone prescriptions called compounded hormone prescriptions.
- ⇒ HGH therapy increases cell growth in healthy and cancerous cells, so HGH therapy should only be performed on low-risk patients with extreme caution.
- ⇒ Strenuous physical activities such as long distance running increases testosterone consumption and can deplete testosterone levels. Intense or prolonged emotional stress also depletes testosterone levels.
- ⇒ Happiness and sexual pleasure can increase testosterone levels.
- ⇒ Testosterone can be administered through transdermal creams, injections, orally, sublingual, or subcutaneous implants.
- ⇒ Testosterone levels can be increased naturally by eating enough calories, eating adequate fruits, vegetables, meat, poultry, eggs, fish, and amino acid supplements. Avoid alcohol, vinegar, caffeine, sugar, sweets, soft drinks, milk, cereals, stress and tobacco.

- ⇒ Testosterone can convert to estradiol (E2) which can lead to increased cancer risk, increased fat and “femininity.” Men can inhibit this conversion by reducing alcohol and caffeine intake, increasing meat and other animal protein intake, losing weight, exercising, and increasing HGH or progesterone.
- ⇒ Progesterone therapy can decrease estrogen levels in men, thereby reducing fat, risk of cancer and possibly the risk of cardiovascular disease. It can also reduce DHT and possibly male pattern baldness.

Male Hormone Highlights

- ⇒ Male and female hormones are similar. Testosterone dominates the male sex hormones while estrogens dominate female sex hormones.
- ⇒ Testosterone provides sex drive and builds muscles and bones. Testosterone declines gradually after age 30.
- ⇒ Testosterone may be converted to estrogen in men. This not only reduces the available testosterone, but also has a feminizing affect. Studies reveal that estrogen conversion may increase the risk of prostate cancer.
- ⇒ DHT is a metabolite of testosterone and causes male pattern baldness.
- ⇒ Human growth hormone (HGH) stimulates cell growth in normal and cancerous cells and has received significant negative press as a performance enhancing substance with athletes. HGH must be used with caution.
- ⇒ Male hormone treatments should address all hormones and not just sex hormones. These include insulin, cortisol, estrogens, progesterone and thyroid.
- ⇒ Happiness and sexual pleasure increase testosterone.
- ⇒ Bioidentical testosterone can be administered via transdermal creams, IM injections, orally, sublingually or with implanted pellets.
- ⇒ Progesterone decreases estrogen levels in men, reducing fat, cancer risk and potentially cardiovascular disease risk.

Avoid Weight Gain, Diabetes & Metabolic Syndrome

The United States is experiencing an obesity epidemic; two thirds of the population is overweight or obese. The proliferation of diets and diet pills has created the false belief that weight is controlled by a small change in eating habits or an occasional trip to the gym. In reality, weight management is very complex. Weight and weight-related disease must be properly managed with hormones, neurotransmitter support, diet, exercise, stress management and sleep. Age can create difficulty in managing sugar, which can create diabetes or insulin resistance. Excess weight can also create complications like increased blood pressure (hypertension), increased triglycerides, and decreased HDL (good cholesterol). These health issues may culminate in Metabolic Syndrome. Many experts predict that Metabolic Syndrome will reach epidemic proportions in the years to come.

Manage Your Weight

So how do you lose weight and keep it off? Weight management requires more than consistent dieting and exercise. To keep weight off, you must manage hormones like insulin, cortisol, testosterone, estrogens and progesterone, optimize brain function to control cravings, maintain an effective diet that is tailored to your biochemistry, maintain a physical exercise program that is also tailored to your needs, get quality sleep, and reduce stress levels. Once these elements are controlled, you can pursue a healthy weight management program.

Balance Hormones: Insulin, cortisol, testosterone, estrogens & progesterone all play a major role in regulating glucose in the body. Since glucose is the primary cellular fuel source, effective glucose regulation is vital. Unbalanced hormones disrupt glucose regulation, often leading to insulin resistance, which in turn leads to weight gain and possibly Metabolic Syndrome.

Optimize Brain Function

Is your hunger in your stomach or in your head? Either can be true! When the stomach is empty, nerves send signals to the brain that compel us to eat. Whether the stomach is empty or not, cravings can come from your brain. To reduce your cravings, a balance must be achieved in the brain's biochemistry.

Dopamine is an excitatory neurotransmitter in the brain. Dopamine-deficient individuals often crave fats, sweets, caffeine or chocolate. Cravings can be alleviated with a dopamine-rich diet or dopamine-enhancing supplements.

Serotonin deficiency also causes cravings. Typically, serotonin-deficient individuals crave starches like breads, donuts, cookies, crackers or French fries.

Manage Diet

Modern bookstores house shelves upon shelves of diet books. Which diet is right for you? Your diet must be tailored to your own needs, which are revealed in your biochemistry. Neurotransmitter and hormone deficiencies should be enhanced and supplemented by diet. Similarly, excesses can be addressed by restriction and avoidance in a custom-tailored diet. The effective management of weight and biochemical markers requires the testing of and education about your own, personal biochemistry.

Exercise

Just like diet, exercise programs should be tailored to individual needs. Moderate exercise helps virtually every body and brain function, however too much exercise may deplete the body of essential vitamins, minerals and hormones. The biochemistry of the athlete must be restored and maintained. Nutrient deficiencies are common even in weekend Olympians.

Different types of exercise may help or hinder body functions and biochemistry: Weight bearing exercise strengthens bones and muscles and helps to prevent osteoporosis. Prolonged intense exercise, however, will decrease testosterone and elevate cortisol which may have detrimental effects, especially in males. It is essential that diet and exercise programs are tailored to your current biochemical needs.

The human body responds hormonally to stress. In particular, DHEA and cortisol increase in an attempt to govern the stress. If stress is long-term, the adrenal glands cannot produce enough hormone and levels become depleted. DHEA promotes weight loss, decreases cholesterol and fatty deposits, and supports the immune system. As DHEA becomes depleted, the body gains weight and fat.

With exposure to stress, cortisol levels elevate as well. Cortisol aids in balancing blood sugar, immune system response and weight control. As stress and cortisol increase, insulin levels often become elevated and sugar levels become unbalanced. This causes weight gain, binge eating, sugar cravings, increased cholesterol, elevated triglycerides, and immune deficiencies.

Elevated cortisol levels compete with and reduce progesterone as well as diminish activity in the thyroid. Thus, the elevation of cortisol can lead to weight gain. Excessive cortisol production in the adrenal glands also diminishes energy levels, and many people turn to coffee, soft drinks or other caffeine or sugar-laced drinks to stimulate and energize their bodies and brains.

Sleep

Sleep is vital to weight loss. To lose weight, the body needs between seven and nine hours of quality sleep. Inadequate sleep elevates cortisol and inflammatory markers. It also decreases the body's response to insulin, which increases blood sugar and causes weight gain. Inadequate sleep creates sluggish feelings with low mental and physical energy levels. Consequently, metabolism slows and the body stores fat, instead of burning calories.

Weight Management Highlights

- ⇒ Excessive weight has reached epidemic proportions.
- ⇒ Losing weight requires a well-managed diet, exercise program, and hormones including insulin, cortisol, testosterone, estrogens and progesterone.
- ⇒ Optimizing brain neurotransmitters will alleviate cravings.
- ⇒ Sleep is vital to losing weight because it reduces cortisol levels, inflammatory markers, and blood sugar.
- ⇒ Stress produces cortisol which can cause sugar imbalances, weight gain, binge eating, increased cholesterol and immune deficiencies.
- ⇒ Diets should be tailored to individual needs taking brain, body composition, cardiovascular system, hormones and immune system into consideration.
- ⇒ In a similar manner as diets, exercise programs should be optimized to enhance all systems.

Avoid the Big D: Diabetes

Diabetes Mellitus, known simply as “diabetes,” is a chronic illness characterized by excessively high levels of glucose. When the pancreas cannot produce enough insulin (the hormone that controls blood sugar), Type I diabetes occurs. Type I diabetics are dependent on insulin. The causes of Type I diabetes are not well known.

In a form of illness known as “insulin-resistant diabetes,” Type II diabetics produce adequate or even excessive amounts of insulin but the cells in the body are unable to respond correctly. This type of diabetes is much more common and is often linked to obesity, high blood pressure, high cholesterol, genetics, stress and a sedentary lifestyle. If not properly controlled, diabetes causes damage to blood vessels in the eyes, kidneys and nerves.⁴⁴ Heart attacks, strokes, kidney failure, and blindness are more prevalent in diabetics. High insulin levels can cause damage to blood vessels in all organs of the body, particularly heart, eyes, and kidneys.

It is important that your annual checkup include fasting blood sugar, i.e. glucose tests. If glucose levels increase from year to year, it is important to reverse the trend. If left unchecked, insulin resistance may set in. Insulin can be controlled to a large extent through diet, exercise and dietary supplements. The glycemic index, a ranking of foods for their immediate impact on blood sugar, is often used to rate foods. Carbohydrates have the highest GI and require the pancreas to produce more insulin. Excessive intake of carbohydrates and fat, common in the standard American diet, over extended time frames can lead to insulin resistance and diabetes. Exercise purges the body of fat, speeds up metabolism and stabilizes insulin levels. Regular exercise and low GI foods assist greatly in the prevention of insulin resistance and diabetes. Dietary supplements often used for insulin resistance include lipoic acid, arginine, B-complex, fish oil, CoQ10, vitamins C,D and E, zinc and magnesium.⁴⁵

Metabolic Syndrome

Metabolic Syndrome, sometimes called Syndrome X, is becoming an epidemic in the United States. People carrying the underlying biochemical symptoms of metabolic syndrome are ticking time bombs, awaiting detonations in the form of cancer, heart disease or diabetes. Surprisingly, some people afflicted with Metabolic Syndrome may appear to be relatively fit, yet they fall within the definition which includes: excess weight, low HDLs, insulin resistance, high LDLs, high homocysteine, hypertension, and high triglycerides.

Curbing Metabolic Syndrome is often difficult because it usually develops from extended periods of poor diet and poor lifestyle habits. It takes a long time to reverse or redirect the condition as well as the habits that created it; treatments are simple to describe but difficult to execute. The best remedy is to avoid weight gain, insulin resistance and diabetes as previously described. If those conditions can be avoided, other elements of metabolic syndrome including hypertension and low HDL often normalize.

Diabetes & Metabolic Syndrome Highlights

- ⇒ Diabetes is a chronic illness characterized by excessively high levels of blood sugar/glucose.
- ⇒ Type II diabetes, or adult onset diabetes, is linked to obesity, hypertension, genetics, high cholesterol, stress and a sedentary lifestyle.
- ⇒ Metabolic Syndrome or Syndrome X shares symptoms with diabetes but also includes low HDLs, high LDLs, insulin resistance, and high triglycerides.
- ⇒ Diabetes and metabolic syndrome occur over years and are difficult to cure—often taking years.
- ⇒ Best treatment for these diseases is prevention.

Maintain Energy Levels

Energy loss is the most common complaint from LexiLife patients. Colorado residents tend to have very active lifestyles, enjoy the outdoors, hold rapid-paced jobs, and raise dynamic families that are equally active. With age, patients are often disappointed that they cannot maintain their rapid pace. They come to LexiLife Health Clinics in an effort to regain their energy. Though there is no “energy pill,” there are treatments.

Energy leaks from our body in many ways. Sex hormones like testosterone decline with age to slow muscle and bone development, leading to less energy. Estrogen, progesterone or melatonin depletion directly or symptomatically reduce sleep quality and quantity. Suboptimal thyroid levels create sub-optimal energy. As human growth hormone is at the very foundation of cell growth, its depletion inhibits cellular energy.

If your brain is amino acid deficient, dopamine may be in short supply and this neurotransmitter, which creates brain “voltage,” will not provide adequate energy to transmit signals to the rest of your brain or body. Deficiencies in serotonin, which is the precursor to melatonin (sleep hormone), may lead to sluggishness or exhaustion.

Metabolism may also slow with age and poor dietary habits. Poor diets also reduce sugar, carbohydrate and protein conversion to glucose, the chemical that all foods are converted to, resulting in low cellular energy. Both active and inactive people often have vitamin deficiencies. For example, B vitamin deficiencies inhibit the body's natural production of a chemical called ATP, which provides ninety percent of body and brain cell energy.

Inefficient cardiovascular systems are unable to deliver adequate oxygen and nutrients to organs, muscles and bones, which results in reduced energy.

These energy sapping symptoms are very common in people over the age of 35. Most health issues previously described can be treated. Simple tests are performed to establish benchmark biochemical markers before treatment programs are developed. Lost hormones are replaced with safe and effective bioidentical hormones, brain neurotransmitters are replenished with amino acids and other necessary supplements. Dietary changes and custom-tailored vitamin regimens kick start metabolism, and integrated cardiovascular system treatments are prescribed. Along with a tailored exercise program, energy levels rise significantly.

.Adrenal Fatigue

Are you exhausted? Can't regain your usual energy levels? Is it challenging to get out of bed each morning? Adrenal fatigue, (technically called "hypoadrenia" or "hypoadrenalism") is quite prevalent and frequently undiagnosed. Beyond simple energy loss, adrenal fatigue is much more severe. Despite its discovery in the 1800's and the first effective treatments in the 1930's, most conventional doctors do not diagnose the problem and remain unaware of effective treatments.

Adrenal glands help the body cope with all kinds of stress, whether from injury, disease, surgery, over-exertion, work or relationship problems. Energy, endurance, and happiness depend on their proper functioning. Although an estimated 80% of American adults suffer from some level of adrenal fatigue in their lifetime, many are still under diagnosed or under treated.⁴⁶

Normally the adrenal glands secrete minute but powerful hormones—primarily cortisol, the stress hormone. Since they are highly sensitive to emotional, physical and psychological changes, long-term stress wears out the adrenal glands and they lose their ability to respond to these stresses. They simply "burn out." As they do so, a variety of symptoms may manifest, like frequent colds

and flu-like symptoms. After continuous untreated periods, more serious conditions may arise including habitual colds, respiratory infections, allergies, sexual disorders, chronic fatigue syndrome, allergies, fibromyalgia, adult onset diabetes, auto-immune disease and alcoholism.⁴⁷

Luckily, a qualified physician can test for adrenal fatigue using simple blood and saliva tests. Samples are often taken at intervals over a 24 hour period so the physician can view a "stress profile." Since adrenal fatigue usually occurs over months and sometimes years, it often takes twelve months or more to restore the adrenal glands.

Treatments are often difficult and require significant patient compliance, because they require patient lifestyle changes. Patients must learn how to create, acquire, conserve and expend energy wisely. This requires an adrenal rebuilding diet and adrenal building supplements. Optimum sleep habits are absolutely necessary. Adrenal fatigue patients that previously had 5-6 hours of marginal sleep must achieve 8-9 hours of quality deep sleep. Hormone therapy including cortisol, estrogens, DHEA or testosterone may be required. Additionally, the source of stress must be identified and reduced. Patients must learn coping mechanisms for difficult situations like job pressures, family illness, and other major life challenges.

Energy Summary

- ⇒ Decreased energy is a prime complaint in Colorado.
- ⇒ Energy loss is often due to imbalanced hormones, brain deficiencies and stress.
- ⇒ Excessive stress increases cortisol levels in the adrenal glands.
- ⇒ Extended periods of stress often lead to adrenal fatigue, in which the adrenal glands cannot produce adequate hormones. Adrenal fatigue is greatly under-diagnosed.
- ⇒ Adrenal fatigue patients must make major lifestyle, diet, supplement, and hormone changes to recover. Recovery periods take months or years.

Build Muscle & Bones!

After age 35, bodies lose up to 1% of their bone density each year and menopausal women can lose up to 3% per year. Bones continually break down and rebuild. When more bone cells break down than build up, bone density decreases causing osteopenia. If left unchecked, this may lead to the debilitating disease osteoporosis. There are significantly more osteoporotic women than men. Estrogen depletion is the biggest cause for bone loss in women and testosterone deficiency is a major culprit in men. It is critical to maintain hormone levels through bioidentical hormone replacement.

Other bone loss culprits are deficiencies in calcium and vitamin D. Vitamin D helps the body absorb calcium. If the body does not get adequate calcium through diet or supplementation, it extracts it from the bone. Excessive protein, salt, sugar, caffeine and soft drinks can decrease bone density and diets rich in calcium and Vitamin D are recommended. Paleolithic diets that help to enhance natural hormone production are also recommended. Exercise and vibration increase the body's natural production of osteocalcin, a primary bone building ingredient. Therefore, moderate anaerobic or weight lifting exercises coupled with exercises that provide minor jarring to bones (jogging and jumping rope, etc.) are advised.

Muscle mass and strength also decrease with age though we can reverse this trend as well. Muscles need exercise, hormones, and a balanced diet with adequate protein. Natural depletion of testosterone, the primary hormone for muscle development, can be reversed through bioidentical hormone replacement therapies. In some cases, human growth hormone may be deficient and should be enhanced. Since human growth hormone stimulates growth of all cells including cancer cells, it should be used with extreme caution. Often times, balanced estrogen and testosterone levels are enough to stimulate adequate muscle development.

Muscles & Bones Summary

- ⇒ After 35, people lose up to 1% of their bone density per year.
- ⇒ This is caused when more bone cells break down than are generated.
- ⇒ Bone density loss can lead to osteoporosis, in which bones become excessively frail and brittle.
- ⇒ Estrogen deficiency is the primary culprit in bone loss in women. Testosterone deficiency is the culprit in men.
- ⇒ Calcium deficiency and vitamin D deficiency are also major factors. Vitamin D helps the body to absorb calcium.
- ⇒ Excessive protein, salt, sugar, caffeine and soft drinks can decrease bone density.
- ⇒ Testosterone is vital for the formation and maintenance of muscle mass.
- ⇒ Diets can be tailored to enhance bone density and muscle mass.
- ⇒ Exercise that includes vibration or jarring helps to produce osteocalcin, which is a major bone building component.
- ⇒ Weight bearing exercise will increase bone strength and density provided there are adequate hormones, nutrients and vitamins.
- ⇒ Exercise will also increase muscle mass provided there are adequate hormone levels, nutrition and vitamins.

Bar the Door to Cancer

Millions of dollars and countless hours are spent on cancer research. Unfortunately, limited progress has been made in finding a cure. As the discovery of a cure seems far in the future, scientists and physicians are now focusing on the cause. A new realm of exciting and progressive treatments with much higher success rates are being developed as we speak.

We all have cancer cells in our bodies. We are bombarded with tens of thousands of carcinogens on a daily basis. It is surprising that we don't all have some form of cancer. Why does one person get cancer while another does not? Studies have shown that genetics play a role, and a history of cancer in your family increases risk. The human genome project has provided valuable lessons to the medical community. One finding is that bodies contain good genes and bad genes. Good gene activity can be enhanced and bad gene activity can be avoided by controlling diet and lifestyle. A genetic predisposition does not mean you will get cancer—but a healthy lifestyle that fosters good gene expression is vital to minimize cancer risk.

The change of focus from a cure to a cause has created a better understanding of cancer growth. Studies show that most cancers grow in our bodies for ten years before they are detectable. A cancerous tumor on a mammogram is not new, but has grown large enough to detect. Although we should always be searching for early signs of tumors, the key to avoiding cancer is not early detection, it is prevention. An optimized immune system quickly attacks and destroys cancer on a cellular level before it is allowed to grow. The key is prevention.

Prevention may require a lifestyle change but is highly effective. Experts in the field predict that within the next decade, there will be little reason for anyone to die of cancer. Sadly, many will still develop cancer because they do not choose to optimize their immune systems and practice healthy habits.

Cancer is a disease of opportunity. Given the right conditions, any cell DNA can mutate through a process called “polymorphism.” When given the opportunity, malignant cells will reproduce at an uncontrollable rate. They only need an environment conducive to uncontrollable growth, namely a weak immune system and a biochemically toxic environment.

Your immune system battles cancer cells by sending out “search-and-destroy” cells known as T and NK killer cells, while other immune system cells remove the dead cancer cells. A strong immune system can kill cancer; a stressed or weak immune system cannot.

Immune system stressors, whether mental, physical or environmental, generate harmful oxygen free radicals that interfere with normal cell development. This leads to cellular polymorphisms and mutated cancer cells. The standard American diet (SAD), with low fiber, high fat, white flour, sugar, preservatives, pesticides, antibiotics and animal hormones severely impedes the immune system. Fruits, vegetables, high fiber, and supplements high in antioxidants, vitamins and minerals will help to keep the immune system strong.

To optimize the immune system, one must first test the blood to determine if adequate white blood cells are produced. T cells, NK killer cells and other immune system components must be present in the appropriate ratios. Pancreatic, liver and gastrointestinal systems must function well. If these systems are not functioning optimally, treatments should be administered. Treatments may include chelation, bowel cleanses, diet alterations, and dietary supplements, as well as medication.

Second, for the maintenance of the immune system, a high fiber, high antioxidant diet must be adopted. Physical, emotional and psychological stress must be reduced. Environmental toxins should be avoided as much as possible. A regular exercise plan that is not too strenuous is recommended. Diets and supplements should contain natural cancer cell killers such as garlic, tomatoes, melatonin, fish oil and milk thistle.

Cancer Summary

- ⇒ After spending millions of hours and dollars on cancer cures, scientists are now focusing on causes in addition to cures with good success.
- ⇒ We all have cancer cells in our bodies but most people are able to avoid tumors.
- ⇒ Genes play a role but with appropriate preventative care, favorable gene expression can keep even genetically predisposed individuals cancer free.
- ⇒ Cancer grows for 10 years on average before a tumor become large enough to detect with devices like mammograms.
- ⇒ The key to cancer prevention is not the early detection of tumors. The key to prevention is the maintenance of a strong immune system which kills cancer cells.
- ⇒ Immune system stressors, including mental, physical or environmental stress generate free radicals that interfere with normal cell development.
- ⇒ The standard American diet severely impedes the immune system.
- ⇒ Test cancer fighting markers before starting a cancer prevention program.
- ⇒ To maintain a strong immune system: adopt a high fiber, high antioxidant diet; control physical, mental and emotional stress, exercise, and reduce toxin exposure.

Cardiovascular Performance

It is no secret that cardiovascular disease kills more men and women than any other disease. Incredible medical breakthroughs are being made daily. Today a blockage can be cleared or a heart valve can be replaced and the patient can be moving around the next day. Like cancer, treatments have focused on disease cures and controls rather than disease prevention. Cholesterol lowering medications are being prescribed at incredible rates. Recently, scientists and physicians have realized there are more important factors for cardiovascular disease prevention.

New research shows that other markers including homocysteine, blood pressure, C-reactive protein, fibrinogen, subcategories of HDL and LDL, and lipoprotein (a) must be managed in order to maintain a healthy cardiovascular system.

The combination of hypertension (high blood pressure) and high homocysteine levels can be deadly. It raises the risk of cardiovascular disease as much as 25 times in women.⁴⁸ Elevated homocysteine levels have been proven to influence heart disease, osteoporosis, and Alzheimer's disease.

C-reactive protein has become a noted predictor of heart disease. In one study of over 28,000 postmenopausal women, it was the strongest predictor of future cardiac events and it is proving to be a major predictor of myocardial infarction (heart attacks) in both men and women.⁴⁹

Subcategories of HDL and LDL are important as well. It is no longer adequate to test for cholesterol, HDL and LDL. A comprehensive blood lipid profile known as a VAP test is necessary. This test provides a physician with more finite subcategories of LDLs and HDLs including VLDL, LDL-C, and remnant proteins. Have a qualified physician do a VAP test to assure that your values are in optimum ranges.

Elevated lipoprotein(a) also known as Lp(a) has also been shown to increase heart disease. Strangely, statin drugs which are designed to lower cholesterol, can elevate Lp(a), which may increase cardiovascular risk.⁵⁰

How does one control these markers and minimize cardiovascular risk? The first line of defense is diet. A cardiovascular healthy diet is high in potassium, low in sodium and white flour, eliminates high fructose corn syrup, and increases fiber among other things.

Also, supplement your diet with a custom-tailored plan. It is imperative that you are tested by a qualified physician before supplementation. Supplements that are often prescribed include CoQ10, L-carnitine, Vitamin C, iron, zinc, copper, magnesium, activated B vitamins, selenium, nattokinase, fish oil, and D-ribose. Also test hormone levels to assure that your body will produce adequate cofactors to energize cells.

Cardiovascular Summary

- ⇒ Cardiovascular disease kills more men and women than any other disease.
- ⇒ A combination of biomarkers need to be measured and controlled to reduce cardiovascular risk: cholesterol, homocysteine, blood pressure, C-reactive protein, fibrinogen, subcategories of HDL, LDL and lipoprotein(a).
- ⇒ A cardiovascular-friendly diet reduces body fat, is high in potassium, low in white flour and sodium, eliminates high fructose corn syrup, and increases fiber.
- ⇒ To reverse and manage adverse biomarker trends, proper lab testing and pharmaceutical grade supplements are required.

Keep a Healthy Sex Life!

Many people experience decreased sexual performance as they age and a chief complaint of middle-aged females and males is the lack of sexual desire or performance. The sexual process of mental arousal, physical arousal, blood flow to the genitals, and orgasm requires a variety of biochemical and physiological conditions and systems to function adequately. Brain neurotransmitters, hormones, nervous and cardiovascular systems must function well.

Nervous System and Arousal

Genital arousal begins in the nervous system. Visual stimulation, touching, kissing or other stimulation begins the process of arousal by sending signals along the central nervous system to the brain. The brain then collects these signals and sends neural signals to various body parts especially to the pelvic region initiating the arousal process.

An effective arousal process requires optimal performance of the brain's neurotransmitters. In particular, arousal requires strong "brain voltage" which is produced by dopamine. If dopamine levels are depleted, excessive stimulation will be required for arousal.

Hormones

Hormones make up the messaging system between the brain and body and they play a major role in sexual performance. Testosterone is the most important sexual hormone. Genital tissue has a significant number of testosterone receptors. Nerves, arteries, veins and muscles require testosterone to develop and function.

Estrogen, on the other hand, often reduces testosterone, especially in males. If men convert too much testosterone to estrogen, sexual function often suffers.

Healthy levels of human growth hormone (HGH) are necessary for sexual optimization. HGH builds healthy tissue cells for mental arousal, cardiovascular tissue for blood flow, and gland tissue to

secrete the biochemicals used in healthy sexual performance.

Progesterone may be a sexual enhancer or inhibitor. As an enhancer, it helps to prevent the conversion of testosterone to estrogens. It also calms the nerves and body, enabling one to relax and respond to stimulation. In males, it may act as an inhibitor by blocking the production of DHT which is a strong hormone necessary to produce an erection.

Your stress fighting hormone, cortisol, can also impact sexual performance. Continuous response to stress requires excessive cortisol. Cortisol shares a pathway with testosterone, and the body may steal upstream biochemicals to produce cortisol, thus leaving less for testosterone production.

Blood Flow

Blood flow is imperative for sexual performance. People with elevated cholesterol, LDLs and homocysteine levels coupled with low HDLs often have impaired arteries and have difficulty with blood flow to the pelvic region. For optimum sexual performance, a healthy diet and exercise are mandatory if cardiovascular disease is present.

Muscle Contraction

Pelvic muscles are also key for optimum sexual performance. Weak muscles inhibit erections and sexual interaction between partners. To strengthen pelvic muscles, Kegel exercises should be done on a regular basis.

Orgasms

Reaching orgasm requires the systems described above to function adequately and long enough to achieve orgasm. Significant problems in one function or an accumulation of minor problems in multiple functions can prevent orgasm. Another brain neurotransmitter, serotonin, also plays a role. Serotonin enhances a person's playful nature and relaxes them so they may fully enjoy the sexual experience. Serotonin deficiencies can be replenished through dietary supplementation of tryptophan, or 5-HTP and with serotonin rich foods.

Sexual performance treatments can be complex and difficult. The following symptoms are common and the following treatments may be necessary:

- ⇒ Dopamine-enhancing dietary supplements may be prescribed for difficulties with arousal.
- ⇒ Serotonin-enhancing dietary supplements may be prescribed for orgasm problems.
- ⇒ Bioidentical hormones are prescribed for testosterone, estrogens, progesterone and HGH deficiencies.
- ⇒ Genital nerve sensitivity and blood flow can be enhanced through nitric oxide enhancers. Polyphenyls (chemicals that are naturally produced in pomegranate, green tea, blueberry, etc.) are prescribed.
- ⇒ Proper diet and exercise are beneficial for sexual performance. They increase hormone levels, improve blood flow, brain health and muscle development.

Sex Life Summary

- ⇒ The sexual process requires mental arousal, physical arousal, adequate blood flow and orgasm.
- ⇒ Arousal response may be optimized through dopamine supplementation.
- ⇒ Progesterone can be a positive or negative influence on sexual performance. Cortisol, your stress fighting hormone, robs your body of testosterone. Optimize testosterone levels for healthy cells and sexual desire.
- ⇒ Elevated blood pressure, high LDLs and homocysteine with low HDLs can impair pelvic artery blood flow, thus reducing sexual performance.
- ⇒ Reaching orgasm can be inhibited by low serotonin. Low serotonin can also decrease your playful nature which may reduce sexual desire.
- ⇒ Treatments include dopamine and serotonin enhancing supplements, BHRT, blood flow enhancing supplements and diets and exercise.

Nurture Relationships & Avoid Maritalpause!

Maritalpause – Dr. Alexis Parker defines “maritalpause” as the deterioration of a partnership or marriage due to hormonal disharmony, environmental or social stressors, or the disruption of mental or bio-chemical elements in one or both parties.

There is a common perception that after many years of commitment and satisfaction, a couple encounters relationship problems because one or both parties lose interest, become involved with a third party, or have “grown apart.” Though mutual interest is key, declining satisfaction may be a result of *maritalpause*, which is a physiologic state. Lifestyle interference (work, raising children, elder parent care, etc.), declining brain health, stress, poor nutrition, poor energy production and declining physical attributes are the underlying problems, and when the necessary functions decline, a relationship suffers. Many people seek help through marriage counseling or through psychological treatments. These treatments may solve the social issues at play, but they do not address the lifestyle and bio-chemical components. Sufferers may find temporary relief but in time, the couple may again be overwhelmed with *maritalpause*.

For the success of a relationship, it is necessary to treat these symptoms and the primary brain and body functions of both partners. To become energized mentally, physically and emotionally for the relationship, all biochemical elements in the brain and body must be functioning at optimum performance levels. If partners regain the physical attraction, mental acuity and sexual interest they once had for their partner, the relationship can be as fruitful as it once was. Improve yourself, your partner, and your relationship!

Maritalpause Highlights

- ⇒ Maritalpause is the deterioration of a partnership or marriage due to hormonal disharmony, environmental or social stressors, and/or the disruption of mental or biochemical elements in one or both parties.
- ⇒ Lifestyle interference, including work, raising children, elder parent care, declining health, stress, poor nutrition, poor energy production, and declining physique, all contribute to maritalpause.
- ⇒ Treatments include brain optimization, hormone therapies, energy replenishment, and social programs.

Sleep Like a Baby!

Sleep is as essential to the body as water or food. The body will shut down if it is deprived of sleep over extended periods of time.

Dr. William Dement writes that “most of us have the idea that sleep is a cessation of all activity, an oblivion we slip into where nothing happens.” In fact, this is far from the truth. Dr. Dement explains that “during sleep the brain releases new combinations of hormones and chemical messengers that stimulate cellular activity throughout the body... the sleeping brain actually appears to be more active than it is while awake.”

Adults generally need 7-9 hours of sleep a night. As we age, we enjoy less deep sleep. Why? For most people, hormone depletion is the culprit. Melatonin, growth hormone, cortisol, thyroid, estrogens, progesterone and testosterone can all play major roles in our sleep quantity and quality. Balanced hormones are essential. In addition to hormones, diet, regular exercise, and a bedtime routine encourage good sleep habits. Also, your brain needs to be in good health. Imbalanced neurotransmitters can have a huge impact on your sleep patterns.

Clinicians can evaluate your sleep habits, perform a physical exam and conduct all necessary tests to determine possible causes for sleep problems. They can develop a “sleep correction program” specifically for you. Programs include bioidentical hormones, brain supplements, diet and lifestyle changes.

Many people depend on sleep medications for sleep. Unfortunately, these medications usually do not provide the deep “REM” sleep necessary to keep you functioning at peak performance.

Patients come to LexiLife looking for alternatives. LexiLife practitioners have found natural treatments provide better quality sleep over extended periods of time. As a result, patients are able to lower dosages of sleep medications and eventually discontinue use.

Sleep Summary

- ⇒ Humans need 7-9 hours of quality sleep.
- ⇒ Your brain and body are very active during sleep. They replenish hormones during hours of rest.
- ⇒ Sleep problems are typically due to hormone imbalances including melatonin, HGH, cortisol, estrogens, progesterone, and testosterone.
- ⇒ Sleep medications usually do not provide deep REM sleep.

Vitamins & Supplements

Do we need to take vitamins and nutrients?

In theory, all necessary nutrients can be garnered from plants, animals and our environment. However, modern society creates an imperfect environment for optimal nutrition. The Journal of the American Medical Association finds “suboptimal vitamin states are associated with many chronic diseases including cardiovascular disease, cancer, and osteoporosis. It is important for physicians to identify patients with poor nutrition or other reasons for increased vitamin needs.” They suggest that “most people do not consume an optimal amount of all vitamins by diet alone...it appears prudent for all adults to take vitamin supplements.”

Why do we need to take supplements? Since we do not live in the ideal nutritional world, we must supplement. Medications, vitamin interaction, soil depletion, food preparation, a greater need for antioxidants, stress, age, lifestyle, and genetics all play a role in the quantity and type of vitamins/minerals a body needs. *A uniquely developed supplement program specifically designed for your needs is essential.* Taking a daily dose of off-the-shelf vitamins or minerals may not do you any good and may even deplete some essential vitamins or minerals to unhealthy levels. For example, zinc excesses can decrease calcium absorption that is essential for healthy bones. Additionally, if supplements and food intake are not coordinated, you may be doing more harm than good.

The Supplement industry—what’s really going on.

The supplement industry is an *unregulated* multi-billion dollar industry. Manufacturers in the pharmaceutical industry are required to prove quality and efficacy; supplement manufacturers are not. Although the FDA is now attempting to tighten manufacturing controls

over supplements, the product formulation, prescription, or contraindications relevant to supplements are not regulated. As a result, supplements sold today are from marketing-driven companies, not medically-driven companies. Very few supplements provide real value to the patients; some may even hinder a patient's health.

All vitamins are not created equal...

There are four supplement grades of vitamins, three of which are designed for human consumption. Animal grade is specifically intended to supplement the diets of pets and farm animals.

Pharmaceutical Grade – Pharmaceutical-grade supplements meet the highest regulatory standards for purity, dissolution (the time it takes to dissolve), and absorption. There is outside verification of quality. *The premier supplement companies do not sell to retailers* because pharmaceutical grade supplements have significant impacts on your biochemistry. As such, they require careful administration and titration by professionals. Popular vitamin retailers carry products that are labeled pharmaceutical-grade, yet virtually none of these supplements actually meet pharmaceutical requirements. These stores are not qualified to provide medical services necessary for pharmaceutical grade supplements and the potential liability that accompanies their use. Their products are mislabeled to maximize sales.

Medical Grade – Medical grade vitamins are typically used for specific medical conditions. They are high-grade supplements designed for specific use.

Cosmetic, Nutritional Grade – Nutritional-grade supplements are typically sold in health food stores and supermarkets. Typically, they are not tested for purity, dissolution or absorption. In addition to impurities, many of these supplements contain unhealthy fillers or binders. Most grocery store and discount retail stores sell this supplement grade.

Supplement Formulation

Quality supplementation of vitamins and minerals does not come from market driven supplementation companies, who typically do not adequately formulate their products. Frequently, these companies have only a basic understanding of the chemical interactions behind effective supplementation. A quality supplement company, however, employs research scientists to continuously formulate and improve products to have the highest impact on specific biochemical pathways. These scientists typically have advanced degrees such as MDs or PHDs and they spend endless hours researching new ways to positively impact biochemical pathways with safe and effective natural supplements. Furthermore, they test for interactions between chemicals within the supplement (such as a multivitamin) and with other supplements (to prevent adverse reactions called contraindications) and pharmaceuticals (drug to supplement interactions). Once they've adequately tested the products, they write rigid specifications for manufacturing and distribution operations to follow. Finally, they recommend dosages and environmental considerations for physicians and patients to follow. Anything short of this rigorous process yields an inadequate and potentially dangerous supplement. Only the pharmaceutical grade supplement suppliers conduct these rigorous formulations. Most of them do not sell to retailers.

Supplement Underdose & Overdose

Correct supplement dosing is critical to your health. To do this, biomarkers must be assessed by a qualified physician, who can then prescribe what to take, in what amount, and when to take it. For example, off-the-shelf products supplementing low vitamin B6, if not optimized for absorption, will pass through your GI tract unabsorbed. An active form of B6 called P5P is readily absorbed into the blood. If B6 is absorbed but the body cannot activate it (convert it into P5P), it will simply store it.

Excessive amounts of B6 can cause neuropathies (numbness, tingling or partial paralysis). If B6 is taken as part of a vitamin B complex but the body does not need the other B vitamins, they will build up and may cause undesirable conditions. Webster's Dictionary defines RDA as "a set of recommendations for dietary intake of specific amounts of essential substances for healthy growth." If your body uses more than that, you will become deficient (underdose) and if it needs less, your body will try to purge itself of the supplement. If it cannot, it will build up in your system (overdose).

Supplements are not pharmaceuticals but they can have intense positive and negative effects. It is unlikely that any supplement less than pharmaceutical-grade will have an immediate affect because they are not absorbed quickly and do not become readily available to the body. Pharmaceutical-grade supplements can have an immediate impact and need to be taken with caution and under physician supervision.

Overdose is a concern with any supplement grade. Overdose often occurs with lower grade supplements because people take them in great volume without testing vitamin levels. Supplement overdose usually does not take place quickly; it occurs over weeks or months of regular use. As levels build, a gradual biochemical reaction often occurs. It often goes unnoticed until the symptoms are significant enough to be checked by a doctor. They are often misdiagnosed because physicians look for more significant "disease symptoms." Common overdose supplements include amino acid overdose from taking protein powders, minerals and B vitamins. The previously described B6 example, causing neuropathies (numbness) is an example. Physicians may misdiagnose this as a nerve problem instead of a vitamin problem.

In today's environment, dietary supplements are essential. However, a person really has two choices when dealing with supplements: educate yourself thoroughly or find a qualified physician.

For those set on self education, use clinical or lab tests to determine the body's supplement requirements and research the formulation, manufacturing and distribution capabilities of the suppliers you use.

Also research the formulation of each product including dissolution, absorption, bioavailability, synergy between ingredients and drug interactions. Compare cost to see if you are getting the best value. As most pharmaceutical grade supplement suppliers do not sell to mass retailers, you may have to settle for a lesser grade.

A more convenient route is finding a medical provider to do this for you. Ask them what precautions they've taken to assure their supplements meet the standards describe previously. Work with the physician to test important markers, devise a supplement program, and periodically retest and adjust dosages.

Herbs

Herbs can be very helpful. Eastern medicine uses a variety of herbs to treat conditions from upset stomachs to cardiovascular disease. In moderation, herbs are useful for general health and well being, but use great caution with herbs. As an emerging market in the United States, they can be purchased in their raw form, in powders, in solutions or in extracts. As with plants, herbs can come in various potencies and are very difficult to control. Before ingesting herbs, research their origin, function, and processing.

Supplement Highlights

- ⇒ Modern society prevents us from getting adequate nutrition.
- ⇒ **You need a uniquely developed supplement program designed specifically for your needs.**
- ⇒ The supplement industry is highly unregulated. Manufacturers are not required to prove quality and efficacy.
- ⇒ The majority of supplements come from marketing companies instead of medically-driven companies. Most supplements provide little value.
- ⇒ Supplements must be designed to properly dissolve, absorb and become available to your cells, which takes intensive development.
- ⇒ Pharmaceutical-grade supplements typically are not available from retailers—even vitamin stores!

Healthy-Aging Patient and Doctor Relationships

Healthy-aging medicine calls for a restructuring of the doctor/patient relationship. Anti-aging physicians must “redesign their practices” instead of augmenting their daily routines with anti-aging components. They must re-educate themselves on newly discovered and tested disciplines in biochemistry, genetic expression techniques, cancer abatement, bioidentical hormone therapies, metabolic cardiology and more.

The physician also must deviate from the traditional medicine that has gradually grown to ignore true patient care. A six minute visit with a two pill prescription, an “acceptable” treatment according to an insurance company, is often a suboptimal alternative.

The physician must really listen to patient problems and respect the patient’s awareness and knowledge of her/his own body. Physicians must fulfill the roles of MD, psychiatrist, naturopath, biochemist, teacher and nutritionist. They must be committed to converting the six minute visit into a sixty minute patient/physician exchange. The physician should not judge the patient’s past lifestyle but rather understand future health goals and construct a health program complete with cause and effect lifestyle, environmental, social, and medical options. The physician can then work with the patient to decide the best course of action.

The healthy aging physician is akin to 19th century doctors, carrying black medical bags, who are just “trying to heal what ails you.” Today’s healthy-aging physicians are armed with an arsenal of sophisticated lab tests, pharmaceutical grade supplements, Eastern and Western medical techniques, world-renowned medical advisors and first class research tools. It is their role to select the most effective treatments and apply the appropriate course of action for each patient’s needs. A healthy-aging physician does not treat disease; a healthy-aging physician treats the patient.

Patients must alter their mindset toward achieving optimal health, and they must accept their responsibility in a health treatment program. They must communicate problems, accurately portray their lifestyle, and set goals at all times. With the physician, they must develop a treatment strategy and must comply with the treatment program. They must communicate their symptoms, feelings and behaviors so the treatment program may be altered to suit their needs and desires. The interactive process is a continuous journey to maintain health and longevity. With your physician, plan, test, treat, and adjust. Once a system is optimized, maintain it. If you don’t respond to the treatments, stay committed to a healthy lifestyle and work with the physician to adjust the treatment program.

Can you put a price on health? The patient must understand that she/he will have to spend some money. Unfortunately, insurance covers disease, not health. As such, there is a financial responsibility on the part of the patient. There may be some insurance reimbursement but not 100%. In the long run, money can be saved with lowered insurance deductibles and fewer doctor and hospital visits.

Educate yourself! A quality healthy-aging physician will encourage you to learn more about medicine. Ask what you can read, where to get information and how to best learn about your situation. Education about health and your body will open your mind to the variety of treatment options and will encourage you to be more compliant with treatment programs.

You and your doctor are a healthy-aging team. Find the right partner and enjoy a long, happy and healthy life!

Patient/Doctor Relationship

- ⇒ Healthy-aging medicine requires a restructuring of the doctor/patient relationship.
- ⇒ Physicians must restructure their practices to initially spend as much as 60 minutes with patients, not six.
- ⇒ A healthy aging physician fulfills the roles of psychiatrist, MD, naturopath, biochemist, teacher, nutritionist, and especially good listener.
- ⇒ Patients need an open dialog with their physician.
- ⇒ The patient should understand that this is a health journey and compliance to a treatment program makes the journey more worthwhile.
- ⇒ Insurance may cover part of the expense, but full reimbursement is not guaranteed. In the long run, health is worth much more than the expense.

LexiLife Health Clinics

LexiLife improves and enhances lives through preventative care. The disease-oriented, traditional system treats only adverse conditions or diseases. LexiLife uses advanced technologies and techniques to optimize your physical and mental health to avoid disease.

Using a custom-tailored blend of nutrition, *bioidentical hormone therapy*, nutritional supplementation, exercise, and lifestyle programs, specifically designed for you, our team of medical professionals will assess your health, develop a treatment program to optimize performance, and assist in attaining your individual goals. Whether you want to become a competitive middle-aged athlete, live a quality life until 100 years of age, or simply want to feel better, LexiLife can design a program to fulfill your desires. We utilize safe, proven, evidence-based treatments under a doctor's care.

The LexiLife program is a brain-plus-body diagnostic and treatment system designed to optimize your quality of life. It addresses the following areas:

- Hormone Therapy* – Assessment and optimization of female and male hormones.
- Heart and Cardiovascular System* – Assessment of heart and vascular risk factors. Enhancement of cardiac protective factors.
- Immune System* – Preemptive measures for the prevention of major and minor illnesses.
- Muscles and Bones* – Management of diet, exercise and hormones for rebuilding and maintaining strong muscles and bones.
- Brain* – Programs for assessing and improving mood, acuity, memory, and sleep.
- Aches and Pains* – Effective pain diagnosis and root cause treatments with reliable referral sources.
- Metabolic Systems* – Programs designed to optimize body metabolism necessary for optimum brain and body performance.
- Sexuality* – Programs to improve libido and sexual performance.

Based on your needs and desires, a program can include a combination of diet assessment, lifestyle assessment, physical examination, brain test, lab tests, body and brain therapy programs, nutrition programs, lifestyle programs, and exercise programs. These programs will be developed and provided to you by medical doctors, nurses, professional nutritionists, and certified trainers.

Testimonials

Sam—Erie, Colorado

"I was exhausted all the time. My sleep was disrupted and I had unexplained pain throughout my body. Previously, I was on the go all the time but lately, I hardly had enough energy to go to the grocery store... Dr. Parker gave me one of the most thorough exams I've ever had and did an extensive lab work-up. She found that I had hormonal imbalances and adrenal fatigue. After prescribing bioidentical hormones, diet and lifestyle changes my energy went from 20% to 75% . I am still improving."

Kendra—Aurora, Colorado

"At age 35 , I was suffering from heavy, painful menstrual cycles, weight gain around the middle, insomnia, memory loss, mood swings, fatigue and acne. I thought, either this is what happens when you hit your mid-thirties, or something is very wrong. I consulted with Dr. Parker and began the LexiLife program. Within the first month, everything began to change. I slept through the night and noticed an increase in my energy level. By my third month, I had lost eight pounds (majority around my mid-section and hips), my menstrual cycles where becoming regular, and I was much more pleasant to be around. I am now five months into the program and I feel a lot like I did in my twenties."



Alexis Parker, MD Biography

“This generation will have untold options to live a longer life. However, just because we can live longer, does not mean we will live better. My goal is to provide patients with options for a better life, to inspire them to maintain a regimen that helps keep them young, energetic and looking their best. The combination of Lasair Aesthetic Health and LexiLife Health Clinics provides a unique opportunity for anyone to live, feel and perform at levels they did years ago. Using the most advanced treatments and technologies available allows us to live happily and healthfully into our hundreds.”

EDUCATION & ENTHUSIASM THAT INSPIRES TRUST

“My education and training have prepared me to meet medical challenges with the insight necessary to determine what is in my patients best interest. I have performed residencies in plastic surgery and general surgery. As a board-certified physician, I practiced emergency medicine for over 16 years. My continuing education has centered on anti-aging medicine as well as laser and aesthetic procedures for over 10 years. Thus I am able to provide my patients with the most current and effective options for healthy aging. I love what I do: I guide people into healthier and more active lives and assist them in achieving a more successful self-image. In the end, people want results and I want to exceed their expectations.”

A COMMITMENT TO PEOPLE & HER PROFESSION

"As an anti-aging physician and a laser and aesthetic medical specialist, I have made continuing education my top priority. The science of anti-aging medicine is rapidly growing and changing. New technologies emerge regularly, which enable me to restore a youthful lifestyle and healthy appearance to my patients as well as share my professional skills, knowledge and passion."

PROFESSIONAL EXPERIENCE TO EXCEED EXPECTATIONS

"For over sixteen years, I was board-certified and practiced medicine in inner city hospitals. I cared for emergencies in every specialty of medicine. Many of the patients I saw had life-threatening conditions demanding accurate and immediate decision-making. That experience, in addition to my continuing education and practice, has given me the confidence to advise patients on the most beneficial treatments to meet their desires and needs, as well as empathize with the changes and challenges my patients face in today's youth culture."

Certification and Memberships

Diplomat: American Academy of Anti-Aging Medicine

Fellow: American Society of Laser Medicine and Surgery

Training

Fellowship: Burn Surgery & Research, University of California, Irvine, Department of Plastic Surgery

Residency: William Beaumont Hospital: General Surgery, 3 yrs, Plastic Surgery, 6 months

MD: Wayne State University School of Medicine. Detroit, Michigan

MS: Physiology, Wayne State University

BA: English, Wayne State University

Medical Specialties

Healthy Aging: Bioidentical Hormone Replacement Therapy, Brain acuity and memory, immune system optimization, cardiovascular system protection, metabolic optimization, muscle and bone revitalization.

Laser and Aesthetic Dermatology: Thermage, Sculptra, Fraxel, Dermal fillers, Lip Augmentation, Laser Photorejuvenation, Laser Acne Treatments, Botox, Laser Hair Removal as well as a number of other treatments for aging skin, sun damage and birthmarks.

Professional Experience:

Founder: Lasair Aesthetic Health, PC, 1997

Cofounder: LexiLife Health Clinics, LLC

Emergency Physician: Broward County Hospital, Ft Lauderdale, FL

Founder: Wellness Clinic, Fort Lauderdale, Florida 1991



Dave Palmstein Biography

"Research and technological advancements in the medical and genetic fields provide tremendous opportunity for longer, happier and healthier lives. The key is to apply these advancements towards health optimization and disease prevention instead of disease cure. Let's keep people performing at optimum levels regardless of age. Its amazing how healthy people can be and how good they can feel if their biochemistry is in peak condition regardless if they are 40 or 75."

Dave Palmstein, President and Cofounder of LexiLife Health Clinics, earned his Bachelor's degree in Mechanical Engineering (Bioengineer specialty) with continuing education in Electrical Engineering from the University of Minnesota in 1980.

Dave Palmstein was instrumental in building multiple successful medical, nutraceutical, and food industry companies over a 20-year period. He developed innovative electronic batch records, procedures, and processing systems approved by the FDA and widely adopted by food, pharmacy and supplement manufacturers today.

Early in his career, Dave used his engineering background to design and manufacture audio equipment for blind and disabled individuals. He created tools to improve their functions beyond the limitations of their disabilities. His inventions included innovative hearing aids, and patient specific personal audio devices. The devices were purchased by the U.S. Library of Congress and issued to people throughout the U.S.

Later in his career; he developed processes and technologies that streamlined chemotherapy administration to home-bound cancer patients. He then focused on the food and nutritional supplementation industry, where he was instrumental in developing early stage nutraceutical companies, as well as advanced production operations in the food industry.

Dave Palmstein's seasoned background in bioengineering, medical product and process development allows him to bring patients effective, and personalized programs to optimize their health. The practice at LexiLife is unique, advanced, and successful in returning clients to their optimum levels of health and vitality.

Dave has supervised and guided LexiLife while actively working with physicians, universities and clinics around the world to develop new technologies, supplements and treatments for healthy aging.

He truly believes that the LexiLife program can help you live a happy and healthy life beyond 100.

Professional Experience:

Founder & President: Credence Automation Systems 1990

Founder & President: Birch Creek Partners 2004

Cofounder & President: LexiLife Health Clinics, LLC.

Cofounder & President: Lightning Nutraceuticals, LLC.

Glossary of Healthy-Aging Terms

Amino Acids— The basic building blocks of proteins. These are vital for developing muscles, producing enzymes and for normal brain functions.

Acetylcholine — A major neurotransmitter in the brain and nervous system. Influential in controlling brain speed and memory.

Adrenal Fatigue—A condition in which the adrenal glands fail to produce the necessary hormone levels (primarily cortisol) required for normal functions. It is typically due to prolonged periods of excessive physical, emotional or environmental stress.

Adrenal Glands— Sometimes referred to simply as “adrenals”, these two small glands sit on top of the kidneys and produce a variety of critical hormones especially cortisol but also estrogens in postmenopausal women and testosterone in andropausal men.

Andropause— A state of men's health typically characterized by a change in hormones and symptoms related to hormonal deficiencies. Men with this condition often have reduced testosterone, HGH, increased estrogens and symptoms of metabolic syndrome.

Aromatase—An enzyme produced in the liver that is instrumental in converting testosterone to estrogens especially in andropausal men.

Arrhythmia— A heart condition exemplified by abnormal electrical activity, instigating a rhythm that is too fast, slow or irregular.

ATP—Adenosine 5 Triphosphate. The major energy-producing molecule produced in cellular mitochondria. Since primary organs such as the brain, liver and heart have large amounts of mitochondria, adequate ATP production is vital to normal cell and organ function.

Autoimmune Disease— A disease caused by an overreaction of the immune system toward chemicals normally present in the body. The immune system misinterprets these chemicals as foreign substances and attempts to rid the body of them.

Biochemical Markers— Key chemicals within the body that are used to determine the biochemical state of health. Also, known as biomarkers or simply markers, these chemicals are often measured through blood, urine or saliva. Using biomarkers, physicians can tell if key chemical reactions are taking place in the body.

Biochemistry— The study of chemical processes in the body. Biochemists are concerned with the normal and abnormal chemical chain reactions (pathways) and the body's response.

Bioengineering— The application of engineering principles & technologies to solve biological and medical problems. Using biology, physics, and chemistry as foundation principles, bioengineers develop real-life technologies and solutions to human health problems.

Bioidentical Hormones— Hormones used in treatments that are exact replicas of the body's natural hormones. As a result, bioidentical hormones typically enhance a patient's biochemistry without side effects.

Biomarkers—See the entry for "biochemical markers"

BHRT- Bioidentical Hormone Replacement Therapy. A treatment protocol that utilizes only bioidentical hormones.

Carcinogens— Any substance that is directly involved in cancer promotion.

Centurions— People at or over 100 years old.

Chemotherapy— The chemical treatment of disease that is used primarily to destroy cancer cells.

Cholesterol—An alcohol and steroid combination found in all cell membranes that is the foundation substance from which hormones are made, including pregnenolone, progesterone, cortisol, DHEA, testosterone and estrogens.

Collagen— Collagen is the primary protein used in connective tissue. It has tremendous tensile strength and is a major component of facial, ligament and cartilage tissue.

Cortisol— A hormone produced by the adrenal glands that responds to stress. It increases blood pressure and blood sugar and reduces immune response. Extended periods of stress requiring high levels of cortisol will eventually over-task the adrenal glands until they can no longer produce enough cortisol, resulting in adrenal fatigue.

DHEA— Dehydroepiandrosterone is a steroid that is often referred to as the "Mother of all Hormones." It is the most abundant hormone in the human body. Testosterone and estrogens are made from it.

DHT— Dihydrotestosterone— DHT is a metabolite of the hormone testosterone. It is the hormone responsible for male pattern baldness and it plays a role in sexual performance.

Diabetes— Officially known as "diabetes mellitus," diabetes is a metabolic disorder resulting in high blood sugar. Type I diabetes is caused by insufficient insulin production by the pancreas. Type II diabetes, or adult onset diabetes, typically occurs as a result of insulin resistance and improper diet.

Dopamine— A major neurotransmitter in the brain that is influential in controlling brain voltage and deep thinking. It is a precursor to adrenaline (used as a response hormone for flight or fight).

Electronic Batch Record— Electronic records used in the manufacturing process of pharmaceutical and nutraceutical products to record machine settings, temperatures, material quantities and quality control measurements.

Estrogens— A group of steroid compounds that include estriol, estradiol and estrone. Estrogens are the primary sex hormones in women but are also present in men.

Endorphin Pathway — The biochemical pathway or set of molecular chain reactions from which endorphins are created and used to convert to downstream substances.

FDA —Food and Drug Administration. The U.S. governing body over food, nutraceutical and pharmaceutical manufacturing.

GABA— Gamma-aminobutyric acid. GABA is a major neurotransmitter in the brain that controls brain wave rhythm. It is a brain-inhibiting neurotransmitter so it serves to calm the brain and facilitate sleep. It is also a mood stabilizer.

Gene Expression— A process by which genetic information is converted to RNA and then to a protein. Gene expression determines which genetic traits, "good" genes or "bad" genes, will dominate.

GI Tract— Gastrointestinal Tract. The combination of organs that intakes food and digests it to extract energy and nutrients. The major functions of the GI tract are ingestion, digestion, absorption and defecation. Typically, when discussing the GI tract, one is referring to the esophagus, stomach, intestines (small bowel and colon), gall bladder, pancreas, and liver.

Glucose— A simple sugar in the human body that is used as the primary source of energy and metabolic intermediate. Glucose is converted to other chemicals such as pyruvate that is further processed and converted to energy in the cells.

HDL— High Density Lipoproteins. Known as the good cholesterol, it enables lipids like cholesterol and triglycerides to be transported in the blood stream for the body to use.

Healthy Aging— Also known as Anti-Aging, it is the practice of medicine that preventatively treats patients with common conditions as they age. By optimizing major systems, anti-aging physicians are able to slow or reverse adverse biochemical trends that lead to disease, thus extending health and improving life quality.

HGH— Human growth hormone is a natural hormone that stimulates cell growth. It is synthesized within the pituitary gland. HGH production declines with age and, as a result, bioidentical HGH is at times prescribed to patients with low HGH.

Homocysteine— Homocysteine is an amino acid that cannot be obtained from diet—it must be synthesized in the body— and is then converted to other chemicals. Elevated homocysteine levels have been linked to heart disease and bone density loss and therefore must be controlled.

Human Genome Project— A massive research project that mapped all genetic components of the human body.

HRT— The replacement of any hormone, normally produced by the body, by an external hormone. Hormones may be synthetic (pharmaceutical) or bioidentical (natural).

Hypertension— Elevated blood pressure.

Hypogonadism—A condition exemplified by low testosterone in men.

Hypothyroid— A condition whereby inadequate thyroid hormone is produced by the thyroid glands.

Insulin— Insulin is a hormone that causes the body's cells to intake glucose from the blood and halts the use of fat for energy.

Insulin Resistance— A condition whereby the body fails to respond to insulin's call for glucose absorption in the cells. Insulin resistance often leads to diabetes.

Kegel Exercises — Exercise used for the pelvic floor region that are intended to increase the efficiency of the muscles used in urination, childbirth, defecation and sexual intercourse.

LDLs— Low density lipoproteins. Also known as the bad cholesterol, LDLs transport cholesterol and triglycerides from the liver to other tissues through the bloodstream. It helps to regulate cholesterol synthesis at tissue sites. High levels of LDL have been proven to increase cardiovascular disease risk.

Leptin— Leptin is a protein hormone that is important for regulating energy usage and intake as well as appetite and metabolism.

Libido— Sexual desire.

Lipids— Fat soluble molecules including fats, cholesterol, and fat-soluble vitamins such as vitamins A,D,E,K. Their primary functions include energy storage and cell membrane structural component development.

Melatonin— A serotonin-derived hormone that is important for maintaining the brain and body's circadian rhythms. Melatonin is very important for managing sleep patterns.

Menopause— The permanent cessation of a female's menstrual cycle. Once believed to be an 18–24 months time period, it is now known to take about 10 years.

Menstrual Cycle— The menstrual cycle is a physiologic change that occurs in females of a reproductive age, which is necessary for reproduction. Under the control of the endocrine system, the menstrual cycle is divided into two phases: the follicular phase and the luteal phase. The length of cycles is typically 28 days.

Metabolic Syndrome— A syndrome nearing epidemic proportions exemplified by excess weight, insulin resistance, low HDLs, high LDLs, high homocysteine, hypertension, and high triglycerides.

Mitochondria— The cellular component that is responsible for producing ATP molecules from glucose and its derivatives. As such, mitochondria is responsible for producing the majority of the energy in our bodies.

Myocardial Infarction— Typically referred to as a heart attack, it occurs when blood supply is interrupted in the heart.

Neurotransmitters— Chemicals used to transfer signals from brain or nervous system cells (neurons) to other cells.

Nucleic Acids— Large molecules that carry genetic information within cells. DNA and RNA are nucleic acids.

Nutraceuticals— Nutritional supplements that have a medical effect on the brain or body. Typically, unlike pharmaceuticals that often block disease symptoms, nutraceuticals enhance natural biochemical functions.

Osteopenia— A condition where bone density is lower than normal.

Osteoporosis— A condition in which osteopenia has progressed to a point where bone density is very low and a person is at excessive risk of bone fractures.

Pregnenolone— A steroid made from cholesterol from which other hormones such as DHEA, progesterone, estrogens, cortisol and testosterone are derived.

Progesterone— A hormone that is primarily involved in the female hormone cycle and works in conjunction with brain neurotransmitters.

Prostate Cancer— A type of cancer that develops in the male prostate. Cancer cell mutations may spread from the prostate to other parts of the body.

SAD— Standard American Diet characterized by excessive proportions of sugar, high fat content, high sodium, preservatives, and low nutritional value.

Serotonin— A major neurotransmitter in the brain that is influential in the synchronization of brain waves. Serotonin helps to develop a playful nature. It is a precursor to melatonin that facilitates sleep. Serotonin is also instrumental in orgasms.

Synthetic Hormones— Pharmaceutical hormones that often alleviate symptoms but cause side effects and increase disease risk. New studies by the National Institute of Health reveal that synthetic hormones can double the risk of cancer or cardiovascular disease.

Testosterone— The primary sex hormone in men. It is instrumental for sex drive in both men and women and it is necessary for building bones and muscles.

Thyroid— The thyroid gland controls energy levels and controls body sensitivity to other hormones.

Tryptophan— Tryptophan is a precursor to the major neurotransmitter serotonin and melatonin. It is a major contributor in maintaining a playful nature and sleep.

TSH—Thyroid Stimulating Hormone. The chemical secreted by the pituitary gland that stimulates the thyroid to produce thyroid hormones (T3 & T4).

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