



Written by Kent Holtorf MD & Nancy L. Evans ND

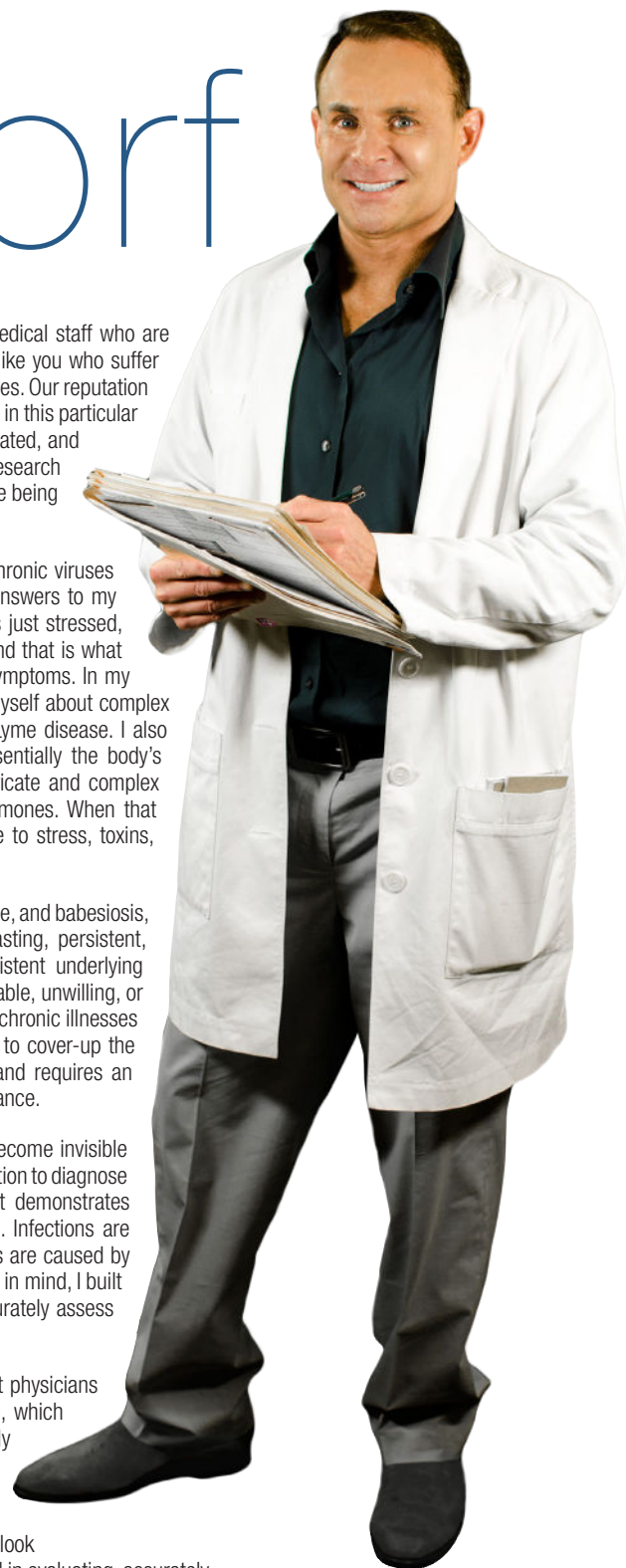




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a message from

dr. holtorf



Welcome to Holtorf Medical Group. Our practice is comprised of physicians and medical staff who are specifically trained and educated in the evaluation, treatment, and care of patients like you who suffer from thyroid disorders, hormone imbalance, immune dysfunction and infectious diseases. Our reputation as one of the most respected and renowned practices in the United States specializing in this particular area of medicine is effectively due to our team of people who are committed, dedicated, and passionate about what we do. We believe in focusing on the latest technology and research to develop and offer the most cutting-edge new therapies; with the goal of our practice being to effectively and optimally restore your health, well-being and quality of life.

The focus of Holtorf Medical Group arose from my own personal experience with chronic viruses and infections while in medical school. I went from doctor to doctor in search of answers to my ever-increasing debilitating symptoms. What I got instead was being told that I was just stressed, depressed, not eating right or not exercising enough. I knew there was more to it and that is what drove me to fully immerse myself into understanding the underlying cause of my symptoms. In my quest to take back my life I fervently started studying, researching, and educating myself about complex chronic illnesses, such as chronic fatigue syndrome (CFS), fibromyalgia (FM) and Lyme disease. I also began to absorb anything and everything I could about hormones which are essentially the body's messengers that control many of our bodily functions. The human body is an intricate and complex machine that is designed to maintain its delicate balance beginning with our hormones. When that balance is thrown off-kilter, it is important to search for the cause. It may be due to stress, toxins, trauma, immune dysfunction, aging or possibly a virus, bacteria, yeast or parasite.

Chronic fatigue syndrome, chronic fatigue immune disorder, fibromyalgia, Lyme disease, and babesiosis, among others, all fall under the umbrella of chronic illnesses, which are long lasting, persistent, and present debilitating symptoms. Most of these illnesses have a unique consistent underlying pathophysiology (underlying causes of the illness); however, many specialists are unable, unwilling, or uninterested in looking into the underlying causes of them. Most physicians will treat chronic illnesses with antidepressants, pain medication, anti-seizure medication or muscle relaxants to cover-up the symptoms. Unfortunately, the nature of chronic illnesses is much more complex and requires an individualized multi-system approach to treatment in order to achieve health and balance.

Thyroid diseases caused by hormone imbalances and chronic illnesses can often become invisible disorders; the reason being that standard blood tests lack the sensitivity and sophistication to diagnose the conditions accurately. Hypothyroidism is usually diagnosed when a blood test demonstrates an elevated TSH level. However, TSH levels do not rise with tissue hypothyroidism. Infections are diagnosed based on whether there are active pathogens, but many chronic illnesses are caused by chronic infections that are not active all the time, but consistently reactivate. With that in mind, I built my practice to include highly sensitive and cutting-edge technology in order to accurately assess and evaluate patients and their conditions.

The incidence of complex illnesses is becoming a world-wide epidemic, which most physicians are ill-equipped to handle. Unfortunately, the medical world is driven by insurance, which derails most doctors' ability to spend the time needed to fully evaluate, accurately diagnose, and carefully treat patients. We at Holtorf Medical Group choose to not subscribe to that philosophy. Patients who come to us have on average seen more than seven physicians with little to no improvement of their symptoms. Our clinic sees patients from all over the country, and even other countries for that matter, who look toward us as their last hope. All of our physicians on staff are highly trained and skilled in evaluating, accurately diagnosing, and treating such complex patients. We use a multi-system approach, which may include IV therapy and nutritional supplements to bring health to the whole patient. Our published and peer-reviewed outcomes have shown that most patients will have significant improvements by the fourth visit, but everyone is different and some can certainly take longer, especially those with severe or long-standing conditions. Complete health and balance, especially if a patient has suffered from debilitating symptoms for years, does not happen overnight, but it can be achieved.

I remember what it was like to regain my health and face the possibility of an active life with confidence and clarity. My goal and the goal of my medical team is to do the same for everyone who walks into our clinic. We invite you to read *The Holtorf Way* with the goal of partnering with one of our doctors to achieve optimal results and regain a full and healthy life.

It gives me great pleasure to hear about your success stories and even more importantly, if we are falling short of this lofty goal in some way. I would love to hear your comments at kholtorfmd@holtorfmed.com.

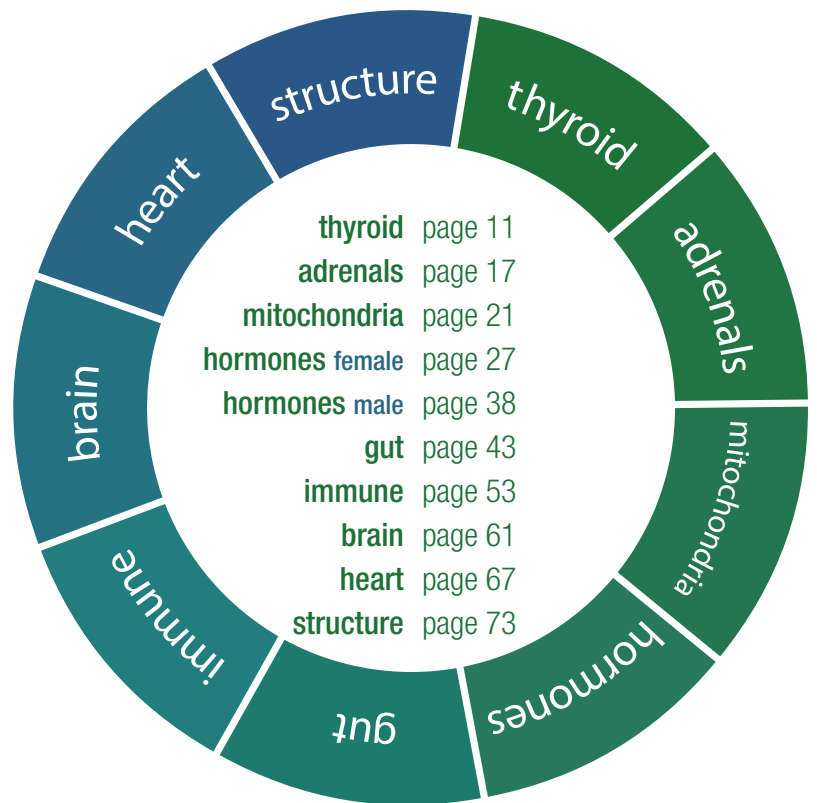
welcome

Welcome to The Holtorf Way, a proven path of evidence-based medicine and optimal wellness. Congratulations on taking the first step to commit to your health. We are equally committed to partnering with you and guiding you on the path to optimal wellness. By now, you've spoken to our new patient coordinator, filled out your paperwork and are ready for your first visit with us at Holtorf Medical Group.

This book is an overview of our approach, which is designed to help you achieve health and wellness. As you explore this guide, you'll see that it is organized by specific systems of the body:

- thyroid
- adrenals
- mitochondria
- hormones
female
male
- gut
- immune
- brain
- heart
- structure

As you follow the pathway to wellness, each of these systems will be evaluated for optimal function and may be targeted for treatment.



This guide is by no means a full explanation of all medical conditions, nor is it a diagnosis of your particular condition. However, it will serve as a guide for you to understand the various systems of the body and as a reference as you begin your treatment. We suggest you take your time and read through the entire book. While you may have been diagnosed with a specific issue prior to coming to Holtorf Medical Group, you may recognize yourself as having more than one of the conditions listed. You may also gain a better understanding of the possible cause(s) of your symptoms.

As you begin treatment, refer back to the sections of this book where we define the various systems in your body, and study the signs and symptoms of that particular condition. You will discover that there are many treatment options. The more you learn about your condition, the better we can partner with you to choose the best approach for your health.

the holtorf way

the holtorf way: our philosophy

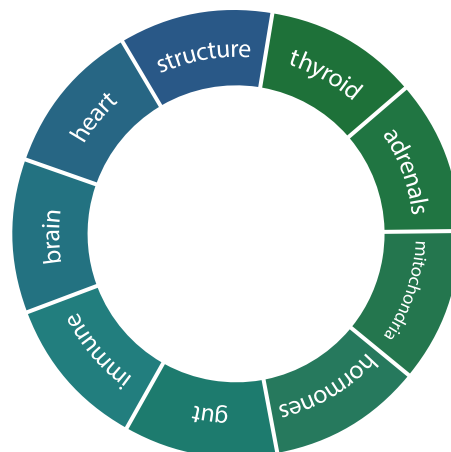
At Holtorf Medical Group, we take a comprehensive approach to treatment that we call “The Holtorf Way.” Instead of viewing the human body as a group of separate components (heart, thyroid, BRAIN, etc.), we see it as a network of multiple systems, each communicating and working in harmony with the others. Symptoms are the body’s way of signaling that one or more of the systems in the body is not functioning optimally. During your search for better health, you may have seen one specialist after another and experienced the “compartmentalizing” of your symptoms. For instance, a cardiologist may have run tests to determine why your pulse is so slow, A pulmonologist may have ordered x-rays and breathing tests to determine why you experience shortness of breath, or maybe your family doctor told you to eat less and exercise more to lose weight. Looking at each of the systems separately, you could see twenty different specialists and never figure out that your symptoms all stem from the same cause, such as an under-functioning thyroid gland.

We do things differently. Taking a comprehensive approach, we look at all of the body’s systems and how they are working together in our search for the cause of a disease or illness. We don’t just prescribe a Band-aid for your symptoms. Our experience has proven that the most effective way to prevent and eliminate disease – and make you feel better – is to treat the cause, not the symptoms. And we believe that the most important tool we have as medical professionals is listening to our patients.

the holtorf way: a multi-systemic approach

Now let us introduce you to our wheel. The wheel illustrates our multi-systemic approach to treating our patients. We have categorized the bodily systems into nine major sections:

- thyroid
- adrenals
- hormones
 - female
 - male
- mitochondria
- gut (or gastrointestinal (gi) tract)
- immune
- brain
- heart
- musculoskeletal



Throughout this book, and during your treatment, you will learn about each system of the body: the signs and symptoms of dysfunction, the testing involved in diagnosis, and the range of treatment options. Your condition is most likely a result of dysfunction of more than one of these systems. True wellness is achieved only when all of these systems are balanced and working in harmony. We strive to help you optimize all 9 systems of the body, so that you can enjoy optimal health throughout your life.

Most people who come to see us have already sought the help of many doctors, and have bounced from one to the next for each of their symptoms. On average, our patients have been treated by more than 7 doctors for their symptoms before coming to us, ranging from their primary care physician (PCP), to alternative practitioners, to specialists, including endocrinologists, rheumatologists and psychiatrists. While we are not primary care physicians, and still suggest you consult your PCP for regular check-ups and acute conditions, we embrace this comprehensive approach to managing your health and can often oversee the majority of your health matters, eliminating the need for you to see dozens of specialists.

diagnosis: the full picture

Our first task as your medical care team is to arrive at a diagnosis. At your first visit, we gather information from many sources to paint a complete picture of your condition. Here are the steps involved:

- We listen to you describe your **symptoms** (i.e. fatigue, pain)
- We note the **signs** through observation and physical exam (i.e. dry skin, obesity)
- We perform **advanced testing** (i.e. Basal Metabolic Rate, Thyroflex)
- We order **imaging** (i.e. X-ray, ultrasound)
- We order **laboratory tests** (i.e. blood tests)

Only through a thorough investigation of all of the above can we determine a correct diagnosis and possible cause of your symptoms. Even if you've been told that your labs are "normal," we will not dismiss your concerns nor ignore your signs and symptoms.

lab tests: optimal vs. normal

When it comes to lab results, "normal" isn't always best, though some doctors rely solely on these reports. But what is "normal"? To determine the acceptable range for any given lab test, the particular laboratory takes in the results from a sample population that may suffer from many illnesses, does statistical calculations and labels the middle 95% of the results as "normal" in a typical bell-shaped curve. The outlying numbers—only the bottom 2.5% and the top 2.5%—will then be considered "out of range" either high or low. In other words, if one day your results were at the top 90%, then a year later slid down to the bottom 10%, the lab would declare both tests as "normal" and your doctor would dismiss your case, ignoring your concerns.

We understand that one normal value does not limit the diagnosis. We rely on our comprehensive diagnostic approach to help us arrive at a true diagnosis. Then we monitor your progress with repeat lab tests and monitor your symptoms at each visit. If you are not feeling **optimal**, we consider it our responsibility to search for the cause and help you improve your health.

evidence-based medicine: 17 years ahead

According to the Annals of Internal Medicine and Journal of American Medical Association, the majority of physicians are not up-to-date with the latest research. In fact, it was found that physicians are, on average, 17 years behind the research, meaning that they are diagnosing and treating with outdated and unreliable techniques.

Dr. Kent Holtorf, founder and medical director of Holtorf Medical Group, is both a follower and a leader of current research, and is a sought-after lecturer and media expert in the fields of chronic fatigue syndrome, fibromyalgia, Lyme disease, thyroid dysfunction, and bioidentical hormone replacement. He himself has suffered

from chronic fatigue syndrome and Lyme disease and this is partly what drives him to research and publish many peer-reviewed studies. He has written treatment protocols used by physicians around the world. His latest area of research includes Lyme disease, one of many chronic conditions that are not being effectively treated by mainstream medicine. With Dr. Holtorf at the helm of Holtorf Medical Group, we stay ahead of the curve. This translates to evidence-based medicine with cutting-edge treatment protocols that work.

our success rate: what you can expect

The quality and level of a person's health is very personal and often difficult to measure. However, by asking patients to complete a quick assessment questionnaire at each visit, we can closely follow each patient's progress. In a study of 500 patients treated in our clinic for the complex conditions of chronic fatigue syndrome and fibromyalgia, patients who had seen on average 7.2 physicians for treatment without any improvement and followed our evidence-based, multi-system approach to testing, diagnosing and treatment achieved the following results:

- 94% of patients had overall improvement by the 4th visit;
- 75% noted significant overall improvement;
- 62% reported substantial overall improvement; and
- The average energy level and sense of well-being for patients doubled by the 4th visit.

Holtorf, K. Diagnosis and Treatment of Hypothalamic-Pituitary-Adrenal Axis Dysfunction in Patients with Chronic Fatigue Syndrome (CFS) and Fibromyalgia (FM). *Journal of Chronic Fatigue Syndrome*. 2008, 14(3):1-14.e

integrative protocols: your treatment options

A comprehensive treatment approach involves a broad range of treatment options. As integrative, open-minded, licensed medical professionals, we choose among all available options, including standard pharmaceutical prescriptions, compounded individualized medications, supplements containing vitamins, minerals and botanicals, and other unique therapies. We also prescribe a range of delivery methods depending on the condition, such as oral pills, transdermal (applied to skin) creams and gels, intravenous therapies, and injections. We have found that the patients who get better faster are willing to embark on this complex approach with us, and they are happy to know that all of their concerns are being addressed.

While research studies rank the effectiveness of medicines on the general population, we recognize that not all treatments work on every patient. Our role as doctor (*docere* = "to teach" in Latin) is to educate our patients, offer a range of possible solutions and help each patient choose what is best for him or her. While we cannot guarantee specific results, we have confidence that we can help you improve your overall health. If an option we provide is ineffective or produces intolerable side effects, we will help you choose other options.

You will read about many treatment options in this book. Here are some of the categories of therapies we prescribe:

medications

While taking a pill to suppress symptoms is not good medicine in and of itself, we do recognize the need for judicious use of prescription medications. We will also work with the medications you are currently taking. When they work, they are usually more cost-effective and covered by insurance. We often suggest that you stay on your current medications while initiating your treatment, or we may prescribe a lower dose while transitioning to other, more effective medications or supplements.

compounded medications

Traditional prescription medications are one-size-fits-all, and often contain harmful additives, fillers, and dyes. Compounded medications, our preferred approach, can be formulated at any dose or strength needed, with fewer fillers, and in any delivery method—oral pills, sublingual troches (lozenges), nasal sprays, or transdermal creams or gels. We will inform you of the advantages of each choice and delivery method to help you choose what will work best for you.

bioidentical hormone replacement

Bioidentical hormones are prescription medications that have the same chemical structure as the hormones circulating in our bodies. There are a few traditional prescription options that will be covered by your insurance, as well as other compounded options that can be individually formulated. There is no longer any valid scientific controversy over the use of these medications, eliminating the need to ever prescribe non-bioidentical synthetic hormones. Lab tests prove that these medications do replace declining hormone levels in patients. You will learn more about bioidentical hormone replacement for women and men in the hormone section.

HoltraCeuticals™: pharmaceutical-grade, doctor-formulated

Over-the-counter supplements are not regulated by the FDA. As such, there is no standard of purity and the industry is fraught with dishonest labeling. However, the most respected nutraceutical companies have taken it upon themselves to join together and set standards of purity and quality, self-monitoring with independent testing facilities. As such, these higher-quality products are available only through medical practitioners, not through discount stores or supermarkets. We have put our HoltraCeuticals™ label with pride on a few of these reputable product lines that carry Dr. Holtorf's formulations. We also contract with individual chemists and manufacturers to formulate other products that contain customized blends of vitamins, minerals and botanicals that have proven results in the scientific literature.

injection therapies

Medications can also be delivered through injections, either directly into the vein (intravenous/IV) over a period of 20-120 minutes, or injected all at once into the muscle (intramuscular/IM) or into the superficial layer just under the skin (subcutaneous/SC). All injection therapies bypass the GI tract, therefore eliminating any digestive upset. This also allows higher, more effective concentrations to be delivered directly to the bloodstream. All treatments can be administered in our office, and patients can be taught how to administer some intramuscular and subcutaneous injections at home. We employ a wide range of injection therapies in our protocols and have observed great benefit to our patients.

unique therapies

Being on the cutting-edge of medical research and practice means adopting new therapies as they are proven effective. With the latest in Dr. Holtorf's research and the technology that is now available, we are able to use the most up-to-date treatment modalities for your condition. Currently, we offer the following therapies:

- PEMF
- Ozone
- UVI
- Cellular peptide therapy

- LDA
- LDI

This is a partial list that is continuously being upgraded. We will provide you with the proper education to help you decide which therapies are best suited for your condition.

lifestyle: path to optimal health

The Holtorf Way will lead you on the path to a healthy lifestyle in support of your health goals. Depending on your condition, we may recommend various diet, exercise, sleep, stress management, and/or lifestyle changes as you progress on your path to optimal health. Each section of this book includes some general recommendations related to the conditions outlined in that section.

education: key to making changes

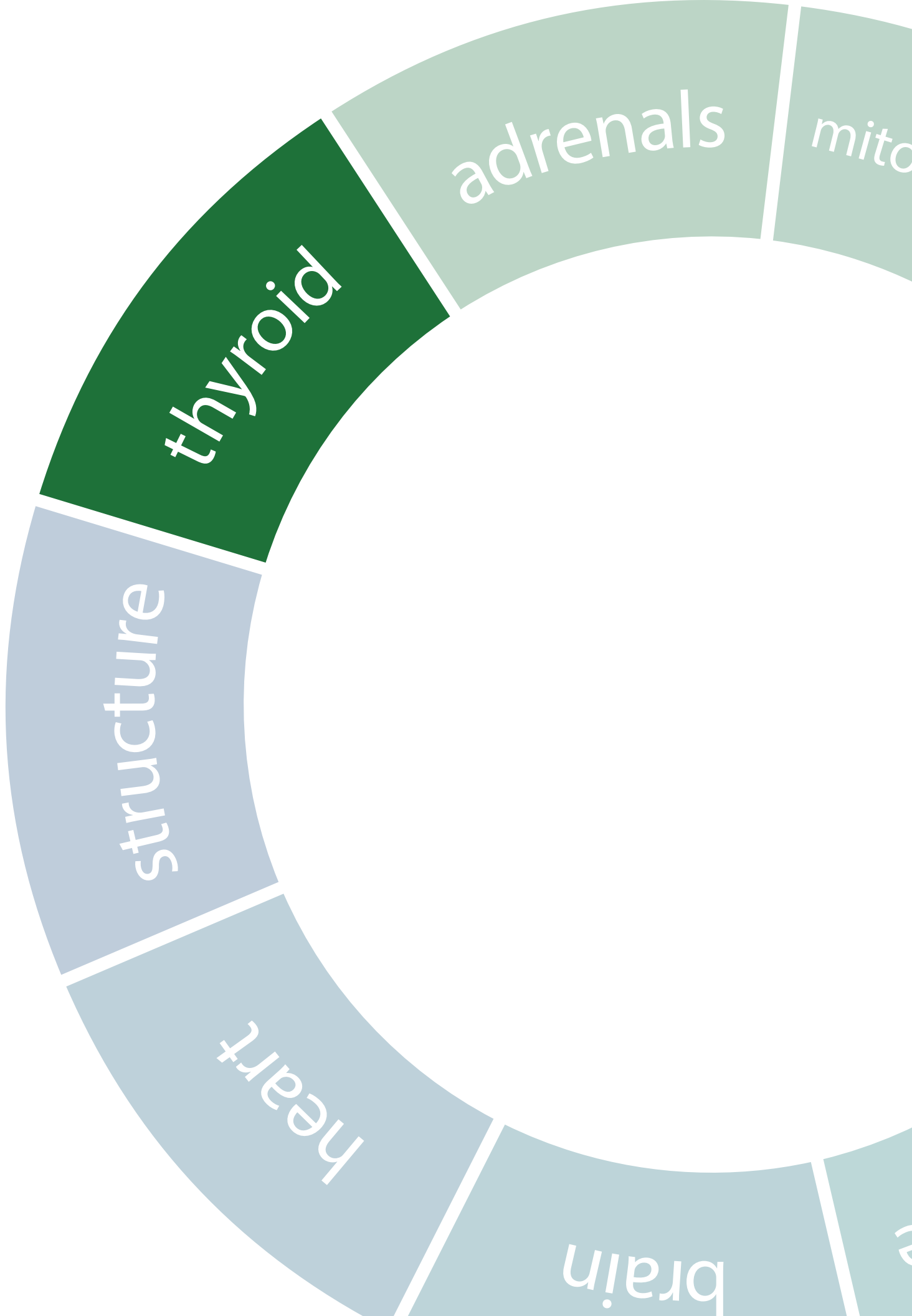
The best tool for making change is education. Let this guide be a starting point for you to learn about your health. We also provide continuing education for our patients in the form of:

- New Patient Coordinators: by phone or email
- Doctor-Patient Liaison for each doctor: by phone or email
- Medical research abstracts
- Treatment handouts
- Webcasts
- Blogs
- Vlogs

For the most up-to-date information, please visit us:

- HoltorfMed.com
- NAHypothyroidism.org
- Holtraceuticals.com
- HotFlashMovement.com
- [Facebook.com/HoltorfMed](https://www.facebook.com/HoltorfMed)
- [Twitter.com/HoltorfMed](https://twitter.com/HoltorfMed)

Let's get started!



thyroid

The most common complaint we hear from our patients is fatigue. Since thyroid hormones control the metabolism of every cell in the body, it is the primary key to optimizing energy. The thyroid gland controls thermogenesis —your body's ability to generate heat and burn calories —and is therefore essential for maintaining healthy weight and body temperature. Evaluating and treating hypothyroidism, hyperthyroidism, or thyroid resistance syndrome can often be the core treatment for optimizing your health.

At Holtorf Medical Group, we specialize in treating thyroid disorders. Although the research is clear, there is still controversy regarding testing of thyroid function. The general use of TSH (thyroid stimulating hormone) as the sole screening test is outdated and has been shown repeatedly in the research to be an unreliable marker of thyroid disorders. Dr. Holtorf has published two separate peer-reviewed studies confirming that TSH is not an accurate marker of tissue levels of thyroid hormone in the cases of stress, chronic fatigue, infection, depression, extreme dieting, obesity, diabetes, and aging. The TSH also misses up to 80% of thyroid disorders in some conditions.

The Holtorf Way uses a comprehensive evidence-based approach in both diagnosing and treating thyroid disorders. For every patient who has hypothyroid symptoms, a full blood panel will be ordered, including TSH, free T4, free T3, Reverse T3, SHBG, iron levels and thyroid antibodies (anti-TPO and anti-TG). A thyroid ultrasound might also be ordered to rule out or monitor cysts or nodules, commonly seen in auto-immune thyroid disease. Further, advanced clinical testing is done in the office, including Thyroflex, BMR and urine iodine (explained below).

Research has proven that treatment with Synthroid (a patented T4-only preparation) or its generic equivalent, Levothyroxine, does not provide optimal results in patients. It has been shown to be impossible to get normal tissue levels of thyroid hormone with T4-only therapy for the majority of patients. Therefore, we provide many options for thyroid medication to optimize your particular body/cellular levels of thyroid hormone.

hypothyroidism: a sluggish thyroid

Some of the most common symptoms of a sluggish, under-performing thyroid are:

- Fatigue
- Low body temperature
- Cold hands and feet
- Slow metabolism
- Weight gain
- Dry skin
- Constipation
- Depression
- Hair loss
- Brain fog
- Loss of the outer eyebrow
- Frequent colds and infections

- PMS
- Irregular periods
- Obesity
- Insulin resistance
- Diabetes
- Bipolar disease

hashimoto's disease: a special type of hypothyroidism

Hashimoto's disease, a subset of hypothyroidism, is an autoimmune disorder that occurs when the immune cells attack the thyroid gland. It is thought to be the most common cause of hypothyroidism, but is actually found to be one of the least common since most causes go undetected by standard blood tests. The main symptoms are the same as hypothyroidism. However, patients with Hashimoto's disease occasionally may have episodes of **hyper**thyroidism, which occur when the immune system attacks the thyroid gland, sending extra thyroid hormone into the bloodstream, causing hyperthyroid symptoms. Patients with this autoimmune form of thyroid disease can swing back and forth between hypothyroid and hyperthyroid symptoms.

hyperthyroidism: an overactive thyroid

If your thyroid hormone production is excessive, the symptoms can include:

- Rapid heartbeat
- Jitteriness/shaking/tremors
- Headaches
- Hunger
- Diarrhea
- Weight loss
- Insomnia
- Anxiety

Patients who are being treated for any thyroid disorder should watch for these symptoms. They can occur as a result of an overactive thyroid or if your medication is too high. You need to tell your doctor if you are experiencing any of these symptoms, especially as you and your doctor are adjusting your medication dosage.

graves' disease: a special type of hyperthyroidism

Graves' disease, a subset of hyperthyroidism, is caused by an auto-immune reaction against the thyroid gland, similar to Hashimoto's disease. However, the symptoms are similar to those listed for hyperthyroidism. In most cases, Graves' disease is a temporary condition inevitably resulting in Hashimoto's disease. This is due to the constant antibody attack causing degeneration and diminished function of the gland. The short-lived hyper (overactive) state eventually converts to a hypo (under-active) state.

tests/labs

The following baseline lab tests will be ordered to evaluate your thyroid function:

- Vital Signs:
 - ♦ Pulse
 - ♦ Blood pressure
 - ♦ Body temperature

- ◆ Weight
- Blood Tests:
 - ◆ TSH
 - ◆ Free T4
 - ◆ Free T3
 - ◆ Reverse T3
 - ◆ Anti-Thyroglobulin Antibody (Anti-TG)
 - ◆ Thyroid Peroxidase Antibody (TPO)
 - ◆ Sex Hormone Binding Globulin (SHBG)
 - ◆ Leptin
 - ◆ Ferritin

Because it may take 3 to 12 months to adjust your thyroid medication dose to the most optimal level, we will monitor your labs at every visit, usually every 1 to 3 months.

in-house testing

- **ThyroFlex Test:** A computerized test that measures the reflex time of your forearm muscle. A slower reflex is indicative of suboptimal (low) thyroid levels. Several studies show this to be a better, more accurate test than blood tests, as it measures thyroid at the tissue level.
- **BMR Test:** This test measures your Basal Metabolic Rate—the amount of calories your body burns at rest. In cases of hypothyroidism, the metabolic rate slows down, causing weight gain and fatigue. We find most hypothyroid patients have a reduced metabolism. Again, studies show that this test more accurately assesses the body's overall thyroid status than blood tests. However, it can be falsely elevated if the patient is under stress or taking stimulants such as coffee.
- **Urine Iodine Test:** This test analyzes a urine sample to measure the level of iodine in your body. Iodine is a mineral that is necessary for the production of thyroid hormones. Low iodine can mean a low functioning thyroid and can also cause thyroid resistance.

compounded medications

After looking at your test results and your symptoms, we may prescribe one or more of the following bio-identical preparations with different ratios of T3 and T4:

- Compounded T4 (Levothyroxine)
- Liothyronine (immediate-release)
- Compounded, sustained-release T3
- Compounded T3/T4
- Natural desiccated thyroid (porcine T4/T3 combinations, such as Armour or Naturethroid)
- Low-dose Naltrexone (LDN) may also be prescribed in the case of autoimmune thyroid diseases (Hashimoto's or Graves') or other immune dysfunction.

Some of our patients are already taking some type of thyroid medication when they first come to Holtorf Medical Group, but they still don't feel well and continue to experience hypothyroid symptoms. We will adjust or change your current medication, increasing or decreasing the amount to find the optimal ratio of T3 and T4. We may continue to adjust your dose every three to four weeks, depending on blood tests and your symptom improvement. Other complicating factors, such as infections or hormonal imbalances, must be addressed as well. In many cases, finding the optimal dose of thyroid hormone medication may take six months or longer before all of your symptoms disappear and you feel completely well again.

Please note that any time we change the dosage of your thyroid medication, we will alert you to any possible side effects and ask you to call us if something doesn't feel right so that your prescription can be properly adjusted. Also note that if your weight changes, your thyroid medication dose may need to be adjusted. It is important that you keep track of your symptoms so that we can adjust your medication accordingly. Once you find the right medication dose, you may stay on that maintenance dosage for a long while.

HoltraCeuticals™: pharmaceutical-grade, doctor-formulated

The thyroid gland needs proper vitamins and co-factors to produce adequate hormone levels. Additionally, certain botanical preparations have been shown to enhance thyroid production and lower antibodies in the case of autoimmune thyroiditis (Hashimoto's or Graves'). The following supplements may be recommended:

- Adrenal Repair
- Iron RX
- Thyrodine
- ThyroRx
- Chelated Multimin

exercise

The majority of hypothyroid patients suffer from mild to severe fatigue. Although exercise is a necessary component to achieving optimal health, initially you may be too fatigued to exercise, so maximizing sleep will be more important to start. As your thyroid medication is optimized and you gain energy, you will slowly begin to feel ready to embark on a healthy exercise program. Until then, focus on adequate sleep and a healthy diet.

diet

Research shows that many people with hypothyroidism have done a lot of severe, low-calorie dieting in the past, which can cause a semi-permanent slow metabolism. While weight loss may be part of your goal, eating a diet too low in calories may actually cause the thyroid to slow down.

As your metabolism increases with your adjusted thyroid medication, a diet with adequate protein, healthy fats and minimal carbohydrates will help increase your metabolism and support your weight-loss goals. Your doctor may also recommend a specific weight-loss program along with your thyroid treatment. For some, the hCG diet, prescription medication and Lipo B shots may be recommended.

additional things to consider

Achieving optimal thyroid function can take time. Most patients have been sick, under-diagnosed and under-treated for many years. It is important to allow your body time to adjust to each medication dosage. We aim for a slow and steady improvement in your health, but the path to optimal health is not always straight. You may experience plateaus or what feel like temporary setbacks in your treatment.

Symptom improvement is different for everyone. Some patients feel more energized and/or experience reduced water retention and weight loss within a few weeks, while most others may take up to a year to experience the benefits of thyroid optimization. Be patient and don't give up. Thousands of people have been helped and you can be, too.

notes

20 horizontal lines for taking notes.



adrenals

mitochondria

hor

thyroid

structure

heart

adrenals

The adrenal glands control energy, sleep, blood sugar, and the ability to handle stress. Their role is to produce:

- Cortisol
- Pregnenolone
- Aldosterone
- DHEA

Your adrenal glands respond to physical, chemical and emotional stress. The main hormone associated with this stress response is cortisol. Under stress, the adrenal glands become overtaxed and can possibly overproduce cortisol and cause immune suppression and weight gain. After prolonged chronic stress, the adrenals may lose their ability to respond, resulting in low cortisol, causing fatigue and the inability to fight infections and weight gain.

low cortisol: difficulty handling everyday stress

We all need enough cortisol in our system in the morning to get out of bed, but less at night so we can go to sleep. When your cortisol and other adrenal hormones levels are low, you may have the following symptoms:

- Fatigue
- Trouble waking up in the morning
- Chronic infections (colds, sore throats, coughs)
- Hypoglycemia
- Low blood pressure
- Light-headedness
- Poor response to stress
- Poor recovery after workouts

high cortisol: too much stress

While we need cortisol in our system, if we have too much we can feel agitated, become anxious, and experience panic attacks. When your cortisol is too high, you may feel these symptoms:

- Anxiety/panic attacks
- Feeling “wired” and tired
- Weight gain
- Insomnia

reversed cortisol curve: wired and tired

Another form of adrenal dysfunction occurs when cortisol is too low in the morning and too high at night causing night time hyperactivity and insomnia, resulting in the feeling of being “wired and tired”.

low dhea & pregnenolone

DHEA and Pregnenolone are two other hormones produced by a different zone of the adrenal gland and aren't as sensitive to stress. However, they do diminish considerably with aging. They are found in high density in the brain, therefore helpful for memory and concentration. DHEA also may convert to testosterone in women and may help boost energy, confidence, skin, muscle tone, and libido. Low DHEA can also be a marker for overall adrenal dysfunction. Symptoms of low DHEA or pregnenolone include:

- Fatigue
- Memory loss
- Inability to focus
- Cognitive decline
- Weight gain
- Trouble sleeping
- Weakness
- Skin laxity
- Low libido

tests/labs

The following baseline serum lab tests may be ordered to confirm your adrenal function:

- Cortisol
- DHEA-S
- Pregnenolone
- Aldosterone
- ACTH

compounded medications

To optimize the levels of the above hormones, we may prescribe one or more of the following:

- Hydrocortisone
- Sustained Release (SR) Cortisol
- Fludricortisone

HoltraCeuticals™: pharmaceutical-grade, doctor-formulated

In addition to certain vitamins that are essential for the adrenals to produce adequate hormonal levels, there are also botanical herbs that can help optimize their performance. DHEA and Pregnenolone are hormones, however, they do not need a prescription. One or more of the following supplements may be recommended:

- DHEA 10, 25 or 50 mg
- DHEA/Pregnenolone 25/100 or 50/100
- Adrenal Repair
- Adrenal Repair-V
- B12 Methyl Factors
- Vitamin C
- Max B



hormones

mitochondria

adrenals

thyroid

structure

mitochondria

Health = Energy. Without energy, we can't survive. As a matter of fact, each cell must produce its own energy in order to perform its role in the overall functioning of the body. These energy-producing factories are called **mitochondria**. Each cell can contain anywhere from 200-2000 mitochondria, with the highest number found where you need the most energy: muscles, heart, liver and brain.

Since the first documented case of mitochondrial dysfunction in 1962, it has been implicated in nearly all pathologic and toxic conditions, from diabetes to Alzheimer's disease. According to research through muscle biopsies, 80% of chronic fatigue syndrome (CFS) and fibromyalgia (FM) patients showed decreased mitochondrial function. Mitochondrial dysfunction presents as the pervasive underlying picture in CFS, FM, heart disease and aging. If your major complaint is fatigue, restoring mitochondrial dysfunction is the first place to start.

The processes of the mitochondria are complex and depend on many factors. They take in glucose and oxygen and produce energy in the form of adenosine tri-phosphate (ATP) by means of an intricate biochemical process called the Krebs Cycle (or TCA cycle). Each step of the cycle requires specific vitamins and nutrients in order to complete its function. If there is a deficiency in any of these vitamins or nutrients, ATP won't be produced, that cell won't perform, and various functions of the body start to decline, resulting in fatigue and degeneration. Furthermore, many medications and toxins can damage mitochondria and result in further inflammation in the body.

symptoms

Symptoms of mitochondrial dysfunction usually present as unrelenting fatigue, post-exertional fatigue (the feeling of being "hit by a truck" after exercise), muscle fatigue/pain/weakness, and the feeling of never having enough energy to perform required daily activities. The heart, our body's most important muscle, also demands high levels of energy in order to function. Therefore, mitochondrial damage can also directly result in cardiovascular disease.

One important note that will be discussed further in the **Heart** section is that statin medications can deplete the body of CoEnzyme Q10, one of the mitochondria's most essential nutrients. This deficiency causes muscle pain, weakness, and degeneration, while also restricting the energy output of the heart, further contributing to cardiovascular disease. Mitochondrial function has been implicated in nearly every type of disease and degenerative process in the body, including diabetes, Alzheimer's disease, Parkinson's disease, cardiovascular disease and aging.

causes

What causes mitochondrial dysfunction? When the body is depleted of certain nutrients, the mitochondria cannot perform their function. In addition, toxins and chronic infections enter into the picture and potentially cause further damage. Let's look into these issues further.

nutrient depletion

vitamins and minerals

The mitochondria have very strict requirements for B vitamins and minerals. If there is a deficiency in any of the following nutrients, mitochondrial dysfunction can result:

- Iron
- Sulfur
- Thiamine
- Riboflavin
- Niacin
- Pantothenic acid
- Magnesium
- Manganese
- Lipoic acid
- Cysteine
- Copper
- Zinc
- CoQ10
- Glutathione

A healthy, balanced diet with large quantities of vegetables, especially green leafy vegetables and sulfur-containing onions and garlic may be able to provide enough of these nutrients to support the mitochondria. However, the supplements listed at the end of this section will most likely be recommended to supply the energy demands of the body, especially for exercise, stress, fighting infections and aging.

dietary fats

Mitochondria are located inside cells, which means that substances must cross the double-layered membrane of the cell, then cross two more membrane layers once inside the mitochondria. The importance of this lies in the fact that membranes are composed almost entirely of fat. They contain a specific ratio of saturated fats to give them their structure, and poly-unsaturated fats to give them their fluidity. Low-fat diets don't provide the necessary ingredients to build these membranes. Furthermore trans fats, such as hydrogenated vegetable oils in margarine and fast foods, insert themselves into the membranes and destroy their shape.

Each phase of energy production occurs in a particular place in, or across the mitochondrial membrane, so it is essential that the membranes are healthy. Eliminating trans fats is essential to restoring mitochondrial function, as well as, replenishing with wild-caught fish and grass-fed animal protein that contain healthy saturated fats and unsaturated essential Omega 3 fats. More about healthy fats will be discussed in the **Heart** and **Brain** sections of The Holtorf Way.

mitochondrial toxins

sugars

Although mitochondria need glucose to produce energy, an overload of sugar can cause oxidation and produce toxic end-products in the mitochondria. Insulin resistance, diabetes

and metabolic syndrome all induce mitochondrial damage. Reducing sugar is one of the most important dietary changes needed to protect the mitochondria.

medications

The list of medications that damage mitochondria is nearly endless, including pain medications like aspirin, Tylenol, NSAIDs, heart medications, antibiotics, antidepressants, antipsychotics, anti-anxiety medications, cholesterol medications, diabetes medications, dementia medications and chemotherapy. If you are taking any of these medications, the benefits must be weighed against the possible mitochondrial damage that could be occurring. At the very least, a robust supplementation program would be recommended to mitigate the damage.

environmental toxins

The list of environmental mitochondrial toxins is even longer and more pervasive. First on the list are heavy metals, such as: mercury, aluminum, cadmium, arsenic, manganese, fluoride, thalium. Next are pesticides, herbicides, dioxin, ethanol, toluene, and benzene. The list keeps expanding as new industrial and agricultural chemicals are introduced into our environment. In the CDC NHANES studies, 27 chemicals were found in all the human samples in 1999, while the list expanded to 116 by 2003. The Environmental Working Group (EWG) found over 210.

It has been stated by many experts in this field that it is no longer a question of *if* we are exposed, but *how much*. Toxins get introduced directly into our body through non-organic produce, antibiotic-raised farm animals and trans fats, as mentioned above. Limiting exposure through healthy food choices and eliminating household chemical products is the first step toward reducing the mitochondrial damage. Protecting our mitochondria is crucial to maintain our health in this industrialized society. We discuss detoxification in the **Gut** section of *The Holtorf Way*.

tests/labs

The emphasis on mitochondrial function is a newer approach to assessing fatigue, cellular energy and aging. There are no practical direct indicators to be found in lab tests to assess mitochondrial function, without doing muscle biopsies or more invasive testing. However, new tests are being developed that we may integrate into your assessment. Diagnosis is more often based on your clinical presentation as well as your response to various treatments. However, blood sugar, body temperature and other inflammatory markers will be ordered to address the level of possible mitochondrial damage. Low body temperature is often a sign of mitochondrial dysfunction, indicating that the mitochondria are not making the proper amount of energy or heat. Treatment will be based on your clinical symptoms.

compounded medications

While further research is being done on medications to treat mitochondrial dysfunction, we may have you taper down or discontinue any medications that are toxic to the mitochondria. Thyroid and adrenal hormones may be prescribed to raise your metabolism and increase thermogenesis while repairing the mitochondrial damage.

Intravenous (IV) medications and intramuscular (IM) or subcutaneous (SC) injections are often recommended in cases of extreme fatigue due to mitochondrial dysfunction. They provide high-dose nutrient replenishment to restore and repair the mitochondria so that your body increases its energy production. These could include:

- B12 Special
- Lipo B
- Power Push
- Immune Push
- The Standard
- Glutathione IV

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At your first visit, if fatigue is one of your complaints, your physician will most likely recommend a restorative program to reset your mitochondria for optimal ATP production. There are specific nutrients that feed the mitochondria as well as optimize communication across mitochondrial cellular membranes and restore any damage incurred from toxic medications, other disease states and aging. The following supplements supply these nutrients to help your body produce more energy. It may take several months to notice a difference, because the damage has likely been occurring for years.

- Antiox Max
- CoQ10 Plus
- Daily Energy Elements
- Iron Rx
- Magnesium Citrate
- Magnesium Glycinate
- Mito Immune
- Mito NT
- Multiplex
- Pyrro Cell
- *Ribomax
- ThyroRx
- Ultra Omega
- Vitamin D
- Vitamin D/K

*In a pilot study, D-ribose was shown to be well tolerated and result in a significant improvement in sleep, energy, mental clarity, pain intensity and well-being.

a note about fatigue

While mitochondrial dysfunction is the central explanation for fatigue, a multi-systemic approach is necessary to restore energy levels in the body. Thyroid, adrenal and hormonal deficiencies can all cause fatigue as well. Furthermore, underlying infections can also stress the immune system and cause the body to shut down energetically. Optimizing each section of The Holtorf Way is necessary to bring energy levels back up to a healthy level.

notes

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hormones

gut

in

mitochondria

adrenals

thyroid

e

female hormones

Hormones can be thought of as your life force. They control everything from your physical attractiveness and chemistry, to libido and sexuality, to mating and reproduction. However, hormones have hundreds of functions in the body beyond just reproduction. They affect your brain (mood/concentration), heart, bones, and skin, as well as the health of your internal organs. The cyclical nature of our hormones is obvious, affecting energy, mood, sleep and weight. Optimal hormonal balance can be achieved through diet, exercise, supplements and bioidentical hormone replacement.

the three main female hormones

- Estrogen
- Progesterone
- Testosterone

A healthy woman's cycle creates a monthly interchange between the female hormones, mainly estrogen and progesterone, as well as testosterone. At each part of the cycle the hormones ebb and flow creating the changes necessary to prepare for pregnancy. In the first part, or follicular phase of the cycle, estrogen increases and dominates, preparing for ovulation. Ovulation occurs around day 14 of the cycle when the egg, or follicle, is released. This triggers the production of progesterone throughout the second part of the cycle or luteal phase. It is natural for your energy to shift throughout the month. However, if you are in good health, you should not suffer from painful periods or uncomfortable PMS.

estrogen

Estrogen is the primary female sex hormone, responsible for the general female body shape, including breast and hip shape. Each month, your level of estrogen fluctuates dramatically, from quite low during the menstrual cycle to peaking before ovulation. Estrogen is vital for fertility. If estrogen levels do not rise high enough, ovulation does not occur, causing irregular cycles, Polycystic Ovarian Syndrome (PCOS), or possibly infertility. Higher estrogen levels can cause breast enlargement and tenderness, painful periods and PMS.

progesterone

On day 14 of a healthy cycle, ovulation occurs. The ovaries produce progesterone which prepares the uterus for a fertilized embryo. If you do not become pregnant, progesterone levels drop, causing the lining of the uterus to slough off, causing a menstrual period. If you do get pregnant, progesterone levels (and estrogen) continue to soar throughout the pregnancy. Many women feel almost euphoric during this time, while others have a more difficult pregnancy due to the dramatic hormonal changes. Progesterone deficiency will cause PMS, heavy periods, breast enlargement/tenderness, uterine fibroids, ovarian cysts, fibrocystic breasts, anxiety, and insomnia.

testosterone

Women also produce testosterone, although in lower amounts than men do. Testosterone affects libido and sexuality, and it also influences bone density, muscle strength and stamina, as well as mental clarity, confidence and energy. Testosterone excess can cause PCOS, infertility, acne, hirsutism (male pattern facial and body hair) and aggression or irritability.

hormonal imbalance

An imbalance of hormones can wreak havoc on the menstrual cycle, turning what should be a natural life cycle into a nightmare of ups and downs, physically and mentally. If you, your daughter or a friend is suffering from any of the following conditions, you should know that you do not have to suffer like this. A comprehensive treatment plan can reduce the discomfort and return life back to a healthy balance. Here are some of the conditions that can occur as a result of hormonal imbalance:

delayed menarche (delayed first period)

If a young woman does not reach menarche (her first period) by her late teens, or if her period begins then suddenly stops for several months, she will be diagnosed with Primary or Secondary Amenorrhea (the absence of menstruation). The timing of menarche is influenced by female biology, genetic and environmental factors. The average age of menarche has declined over the last century likely due to environmental estrogenic toxins. Amenorrhea may be due to several factors, including a genetic or anatomic anomaly, pituitary, hypothalamic or thyroid dysfunction, dietary deficiencies, over-exercising or Polycystic Ovarian Syndrome (PCOS). A complete physical and lab tests are recommended.

irregular cycles

Irregular menstrual cycles can cause symptoms such as heavy bleeding (menorrhagia), cramping (dysmenorrhea), shorter cycles (metrorrhagia) and skipped periods (oligomenorrhea). These can be caused by a progesterone or estrogen deficiency or an imbalance of the estrogen to progesterone ratio.

anemia

Blood loss from heavy periods can cause iron-deficiency anemia. This can cause many symptoms including pale skin, light-headedness, fatigue and even depression. Optimal serum iron and ferritin levels are essential for all young menstruating women. Low iron can also cause thyroid resistance, making symptoms worse even if the iron deficiency isn't associated with anemia. Research has even shown that iron supplementation in healthy young women with low to normal ferritin levels reduced fatigue by 47%. A surprising hint: a young woman who chews ice often is exhibiting a sign of anemia.

premenstrual syndrome (pms)/ premenstrual dysphoric disorder (pmdd)

The week before the menstrual cycle, referred to as PMS, can wreak havoc in your life. PMS is like a tidal wave washing over the brain and body with symptoms such as: heavy bleeding, spotting, cramping, headaches, migraines, breast tenderness, bloating, and water retention.

PMDD is a severe form of PMS that includes mental and emotional symptoms of depression, irritability, and anxiety, beyond what is considered typical for PMS. Often PMS and PMDD are minimized or scoffed at, however they can be a sign of a hormonal imbalance that can be corrected. Birth control pills are often prescribed to suppress ovarian function, to essentially silence the symptoms. While helpful for some, other natural remedies can be just as or even more effective. Also, antidepressant medications may be beneficial, but they don't treat the underlying cause of the hormonal imbalance and may exacerbate the physical symptoms of weight gain and low libido.

polycystic ovarian syndrome (pcos)

PCOS may be the cause of unwanted acne, facial hair and skipped periods. This syndrome often occurs with obesity, high blood sugar and insulin abnormalities, along with high levels of the androgenic (male) hormones DHEA and testosterone. Almost all PCOS patients are low thyroid. A comprehensive treatment will involve blood sugar and hormonal testing, dietary recommendations, supplements and medications.

fibroids, endometriosis, ovarian cysts

An imbalance in hormones may cause more serious pathological changes in your body, such as fibroids, endometriosis, and ovarian cysts. Diagnostic imaging may be ordered to rule these out. These can cause heavy bleeding, cramping, pelvic and lower back pain. Fibroids can also prevent a woman from getting pregnant. These are often a sign of progesterone and/or iodine deficiency.

infertility and miscarriage

Female infertility is a complex medical issue. There are, however, a variety of overlooked causes that many doctors don't pursue, from dietary insufficiencies to more complex issues such as thyroid disease, auto-immune disease, inflammatory and infectious states, or a blood coagulation defect.

tests/labs

To assess your hormonal status, baseline labs will be ordered on a specific day of your cycle (usually day 18-20). We are not only assessing the level, but the balance of all of these hormones. After treatment begins, follow-up appointments may include repeat lab tests to assess your progress.

*Note: It is also beneficial for healthy women to get a full baseline set of hormone tests.

- FSH
- LH
- Estrogen
- Progesterone
- Testosterone
- DHEA-S
- Fasting glucose
- Hemoglobin A1C
- Insulin
- Prolactin
- Serotonin

perimenopause

The definition of menopause is the absence of menstrual periods for 1 year. The term “perimenopause” refers to the time leading up to menopause where cyclical changes begin to occur that can complicate a woman’s life. This perimenopausal time can last anywhere from a few months to up to 10 years before actual menopause. Through appropriate blood tests we can gauge if perimenopause is occurring, and therefore the cause of many of a woman’s symptoms.

Perimenopause generally starts for women as early as their late 30s or early 40s and can last for many years if not treated. Symptoms can also increase after pregnancy, especially if you are over 30. It can also be complicated by family and work life - the 40’s are usually a time of heavy responsibility, so it is crucial that your hormones are balanced so that you can successfully handle the challenges confronting you. A successful treatment plan can optimize a perimenopausal woman’s quality of life during these transitional years.

progesterone deficiency

During a healthy cycle, the ovaries release an egg mid-cycle and produce progesterone. However, as you age, ovarian reserves decline and ovulation may stop completely, causing symptoms of progesterone deficiency. The first symptoms that occur in perimenopause usually affect the menstrual cycle itself. If you’ve had regular periods your whole life, now suddenly you may begin to suffer from shorter and heavier periods, difficult PMS and spotting between cycles. Often the first symptoms are mood changes such as irritability, anxiety and panic attacks, along with fatigue and insomnia. Symptoms may include:

- Longer periods
- Heavy bleeding
- Spotting between periods
- Cramping
- Fibroids
- Cysts
- Endometriosis
- Headaches/migraines
- Breast tenderness/enlargement, fibrocystic breasts
- Bloating, cravings, cramping
- Irritability, anxiety, panic attacks
- Difficulty falling asleep or staying asleep

estrogen deficiency

The symptoms of estrogen deficiency tend to occur later as you head towards menopause. Ovulation stops entirely and periods are skipped for months at a time. During those months, the more typical menopausal symptoms of hot flashes and vaginal dryness start to occur. Symptoms of estrogen deficiency include:

- Missed periods or lighter bleeding
- Vaginal dryness

- Hot flashes
- Night sweats
- Headaches/migraines
- Difficulty staying asleep, waking with night sweats
- Low libido
- Depression
- Weepiness
- Decreased motivation/zest for life

tests/labs

Baseline serum lab tests will be ordered to assess your perimenopausal status on a specific day of your cycle (usually day 18-20). These include:

- FSH
- LH
- Estrogen
- Progesterone
- Testosterone
- SHBG
- Antimullerian Hormone

After treatment begins, follow-up appointments may include repeat lab tests to assess your progress.

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A variety of herbal and nutritional strategies can be used to minimize many of these early symptoms of perimenopause. These could include:

- Chelated Multimin
- Cycle Restore
- Daily Energy Elements
- Magnesium Citrate
- Magnesium Glycinate
- Max B
- Melatonin
- Methyl B12
- Multiplex
- Sleep Tight
- Ultra Omega

compounded medications

Initially, perimenopause can be treated without hormone replacement, however as perimenopause progresses, bioidentical hormone prescriptions may be recommended to either restore your cycle, or replace the missing hormones that your ovaries are no longer producing. Your medications will be individually compounded for you, with adjustments made throughout the perimenopausal transition. There are a variety of delivery methods, each with its own advantages.

menopause

Congratulations - You've gone 1 year without any menstrual cycles! You are now termed "menopausal" or "post-menopausal". Many of you may feel a sense of relief: no more PMS, no more monthly cycles, and best of all—no more periods! Many of your perimenopausal symptoms may have subsided, even without treatment. However, you may still be suffering from hot flashes and night sweats, or maybe they've just begun. The best way to minimize any menopausal symptoms is to have been treated during the perimenopausal years. However, many women don't seek medical help until they have been post-menopausal for a year or longer. At this point, your ovaries are no longer functioning and no longer producing the female hormones estrogen, progesterone and testosterone that were abundant in your younger years. Some women feel better, but for most, this postmenopausal future foretells a time of deficiency due to the lack of benefits that these hormones provided most of your life.

symptoms

Perimenopausal symptoms were unpredictable and even dramatic, due to the erratic functioning of the ovaries. Now, in menopause, the cyclical change is no longer an issue. As a matter of fact, fibroids, endometriosis, adenomyosis and ovarian cysts usually all resolve in menopause due to the decrease in estrogen. Hormone levels are now steady, albeit flat and dropping to zero in some cases, leading to symptoms of deficiency. Hot flashes may have stopped, or for some women they are just beginning, along with those 3:00 AM night sweats. They can persist for a few months, or up to several years post-menopausal. The more insidious effects of hormonal deficiency include vaginal dryness, bone loss, skin aging, memory decline, heart disease, loss of libido, and lack of motivation and zest for life. Even if these symptoms were not treated during perimenopause, they can be prevented and even reversed with treatment now.

progesterone deficiency

These symptoms that were dominant during perimenopause often decline in menopause. However, you may experience the following:

- Persistent difficulty falling asleep or staying asleep
- Fibrocystic breasts
- Headaches or migraines
- Water retention Irritability
- Anxiety
- Panic attacks

estrogen deficiency

When estrogen declines, the symptoms herald a general time of deficiency and what feels like rapid aging. They are more insidious and last longer, and may persist throughout your life. These could include:

- Vaginal dryness and atrophy
- Vaginal yeast infections

- Stress incontinence (leaking urine when coughing, sneezing, or jumping)
- Urinary incontinence
- UTI's (bladder infections)
- Uterine and bladder prolapse
- Decreased libido
- Difficulty staying asleep or waking with night sweats
- Skin aging: thinning, drying, wrinkling
- Headaches, migraines
- Memory loss or difficulty focusing
- Cognitive decline, dementia
- Depression
- Lack of motivation or interest in life
- Decreased bone mass, leading to osteopenia and/or osteoporosis
- Heart palpitations
- Cardiovascular disease

testosterone deficiency

Testosterone doesn't always decline in menopause. Some women still have a robust libido and sex life. However, you may find the opposite is true and suffer from some of these typical symptoms:

- Decreased libido and orgasmic ability
- Decreased confidence or assertiveness
- Skin aging: thinning, decreased oiliness
- Dry eyes
- Decreased muscle mass
- Weakness
- Low stamina

*Your unique menopausal path may present a combination of the above symptoms.

tests/labs

The following baseline serum lab tests will be ordered to confirm your menopausal status:

- FSH
- LH
- Estrogen
- Progesterone
- Testosterone
- Sex Hormone Binding Globulin (SHBG)
- C-Telopeptide
- N-Telopeptide

If you have any baseline labs from when you were 30-35 years old, these can be helpful for individualizing your postmenopausal treatment. After treatment begins, follow-up appointments may include repeat lab tests to assess your progress.

procedures

We may also refer you to other medical practitioners for annual PAP exams, breast exams, mammography, thermography, transvaginal ultrasound and bone densitometry (DEXA), and cardiology work-ups.

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A variety of herbal and nutritional strategies can be used to minimize the early symptoms of menopause, such as:

- Cycle Restore
- Max B
- Methyl B12
- Ultra Omega
- Magnesium Citrate
- Magnesium Glycinate
- Sleep Tight
- Melatonin

compounded medications

As menopause progresses, the following bioidentical hormone prescriptions may be recommended to replace the missing hormones that your ovaries are no longer producing. These are compounds that have the same chemical and molecular structure as hormones that are produced in your body. Your medications will be individually compounded for you, with adjustments made throughout the menopausal transition as well as post-menopausally. The adrenal and thyroid hormones also tend to decline during menopause. A comprehensive treatment plan will include optimizing the adrenals and thyroid hormones as well. There are a variety of delivery methods for bioidentical hormones. Each delivery method of bioidentical hormones has their own advantages. We will explain the benefits of each and help customize a plan for you:

- Oral capsules: progesterone, progesterone SR (SR = Sustained Release)
- Transdermal (creams, gels, patches): estrogen, progesterone, testosterone
- Sublingual Tablets: progesterone, testosterone
- Vaginal creams: estrogen, testosterone

In “The Bioidentical Hormone Debate: Are Bioidentical Hormones (Estradiol, Estriol, and Progesterone) Safer or More Efficacious than Commonly Used Synthetic Versions in Hormone Replacement Therapy?” A peer-reviewed analysis of over 196 studies, Dr. Holtorf concluded:

“A thorough review of the medical literature supports the claim that bioidentical hormones have some distinctly different, often opposite, physiological effects to those of their synthetic counterparts. With respect to the risk for breast cancer, heart disease, heart attack, and stroke, substantial scientific and medical evidence demonstrates that bioidentical hormones are safer and more efficacious forms of HRT than commonly used synthetic versions.”

--Holtorf, K. The Bioidentical Hormone Debate: Are Bioidentical Hormones (Estradiol, Estriol, Progesterone) Safer or More Efficacious than Commonly Used Synthetic Versions in Hormone Replacement Therapy? © Postgraduate Medicine, Volume 121, Issue 1, January 2009, ISSN – 0032-5481, e-ISSN – 1941-9260.

male hormones

testosterone

When we use the word “hormones” we usually think of women. However, the male hormone, testosterone, is produced in high amounts in men, peaking in the teenage years and early 20s. Testosterone starts to decline from a man’s mid-30s onward. Testosterone is important not only for a man’s sexual function, but also for healthy brain function, heart health, muscle strength, stamina, and mood. By the time a man reaches his mid-50s, his level of testosterone may be 50% of what it was in his 20s. This is the normal course of aging, however with human lifespan now reaching into the 80s and beyond, a man’s quality of life can be severely impacted by these low levels of testosterone. In addition, average testosterone levels have declined over 17% since 1987, due to environmental toxins, lifestyle factors, and dietary habits.

testosterone deficiency symptoms:

- Reduced sex drive
- Fewer morning erections
- Inability to maintain an erection
- Lower energy
- Mood: irritability and depression
- Reduced sense of well-being
- Poor quality of life
- Decreased muscle mass
- Increased body fat
- Lower pain tolerance

health risks associated with low testosterone

In addition, men who have low testosterone levels are actually less healthy. They have a higher risk of diseases, such as:

- Diabetes
- High blood pressure
- High cholesterol
- Obesity
- Osteoporosis (bone loss)
- Depression
- Cardiovascular disease
- Premature death

tests/labs

The following baseline tests will be ordered:

- CBC (Complete Blood Count)
- Testosterone
- Dihydrotestosterone
- Estradiol
- Sex Hormone Binding Globulin (SHBG)
- Prostate Specific Antigen (PSA)
- IGF-1, IGF-BP3 (indirect markers of Human Growth Hormone)
- In addition we will test thyroid and adrenal function as well as the following tests for diabetes prevention:
 - ♦ Comprehensive metabolic panel, including fasting glucose
 - ♦ Insulin
 - ♦ HgA1C (Hemoglobin A1C)

testosterone replacement

There are several choices for testosterone replacement in men, which can include:

- Transdermal testosterone gel: (To be used daily and rubbed on the shoulders)
- Testosterone injections: (Men will be taught how to do this at home)
 - ♦ Intramuscular (IM) in the thigh: once weekly
 - ♦ Subcutaneous (SC) in the thigh: a smaller dose (and needle) injected 2-3 times/week

In addition, the following medications may be prescribed if a man's levels of estradiol or dihydrotestosterone are too high and has symptoms of gynecomastia (male breast pattern) or hair loss:

- Finasteride
- Dutasteride
- Arimidex

benefits of testosterone

Research shows that testosterone replacement can have profound benefits for men including:

- Improved quality of life
- Reduced joint and muscle pain
- Increased strength and stamina
- Ability to build muscle
- Lower body fat
- Lower risk of Diabetes: improved insulin sensitivity
- Heart benefits: increased cardiac output, lower cholesterol

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There are many herbs and supplements that can also help raise testosterone levels, as well as support prostate health. These research-based herbs can be found in the following supplements:

- Chrysin
- Climaxia
- NO Max
- Prostate Support

exercise

Weight lifting and intermittent high intensity exercise (sprinting), can increase testosterone levels. However, men with low testosterone usually complain of the inability to build as much muscle as they used to. This is where testosterone replacement can help. With appropriate testosterone replacement and exercise, strength and stamina can return.

diet/nutrition

Increased blood sugar leads to increased insulin, which leads to body fat. Making matters worse, in those fat cells, the testosterone will convert to the female hormone estrogen, causing more weight gain and even gynecomastia (male breast pattern). It is very important to increase protein intake at every meal, and start to reduce all processed carbohydrates (breads, pasta, crackers, cookies, beer, etc.). Also, stop drinking out of plastic bottles—the plastic contains Xenoestrogens, a toxic form of female estrogen.

notes



gut

immune

hormones

mitochondria

adrenals

gut

We're using the word "Gut" here to refer to the entire Gastro-Intestinal (GI), or digestive tract where we take in food, absorb the proper nutrients, and rid the body of toxins. Our digestive process begins at the mouth, enters the esophagus, stomach, small intestine, large intestine, with adjunctive roles performed by the pancreas, liver and gallbladder. The gut performs three main functions:

- Immunity
- Digestion and Absorption
- Detoxification

immunity

Immunity is our way of protecting ourselves from the outside environment, with our skin forming the strongest physical barrier. However, our digestive tract is really the most important barrier—technically everything we ingest is still part of the outside--until our digestive tract breaks down nutrients and allows them into our internal environment. It is extremely important that our digestive tract works properly to selectively allow nutrients *in* while keeping harmful agents *out*.

This is accomplished by lining the entire gut with billions of immune cells to protect us. As a matter of fact, the gut makes up about 80% of the entire immune system. This is done through the presence of beneficial bacteria, or microflora, which populate in the mucosal lining of the intestines. When these microflora are out of balance, your immunity is greatly compromised. The microflora in the gut form a barrier that protects against invaders by competing with harmful bacteria and viruses. When this barrier is compromised some of the following conditions occur:

dysbiosis

An unbalanced ratio of good bacteria to bad bacteria can cause indigestion, bloating, diarrhea and constipation. Along with healthy dietary changes, adding probiotics in the form of supplements and/or fermented foods such as yogurt, kefir, sauerkraut, kimchi and pickles can help restore the gut environment.

candida

Among the billions of friendly bacteria that line our gut, there is also a population of a type of fungus, or yeast, called Candida. Candida lives naturally inside our intestines in balance with our beneficial bacteria. Problems occur when our own beneficial bacteria diminishes and the Candida overpopulates, producing toxins that irritate the gut lining, which can then pass into the blood stream.

Gut symptoms from candida typically include gas, bloating and constipation. Joint pain and brain fog are possible clues that the candida has passed through the GI tract into the blood stream. The most common cause of this is from antibiotic overuse. Antibiotics serve a positive purpose of wiping out

harmful bacteria, but in the process they kill our beneficial bacteria. Probiotic supplements, in amounts of 20-100+ billion organisms, are always recommended when antibiotics are prescribed. In the case of severe candida overgrowth, high dose probiotics, antifungal medications and herbs are recommended, along with elimination of sugar and simple carbohydrates to stop feeding the yeast.

small intestinal bowel overgrowth (sibo)

The small intestine is the 21 foot-long, narrow section of our gut where most of our nutrients are broken down and absorbed. The small intestine contains a much lower amount of bacteria than the rest of the gut and only a few types. So when the small intestine is invaded by too much bacteria, then gas, bloating and constipation will occur. The distention and pain may be felt higher up in the gut, closer to the rib cage.

Although we often turn to probiotics for gut health, in this case, probiotics add fuel to the fire, increasing those numbers of bacteria in the wrong place. Specific antibiotics actually help here to reduce the numbers, with a selective use of probiotics afterwards, which will reduce bloating and improve constipation. For stubborn cases we can give specific antibiotics, antifungals, and antiparasitics to “wipe clean” the gut and repopulate the GI tract with beneficial bacteria.

viruses/bacteria/parasites

Viruses, bacteria and parasites are invaders of the outside world that attempt to break the barrier of the gut lining to invade our bodies. The immune system in the gut can usually take care of these, ridding them from our body, often violently through diarrhea or vomiting, but not allowing them to pass into the blood stream.

With a compromised intestinal immune system, the invaders take over, wreaking havoc in the gut and perhaps the whole body with systemic symptoms such as fever, joint pain, skin rashes and chronic disease. Prescription medications and supplements are then used to fight off the offending organisms while supporting the gut. Again, unhealthy inflammatory diets compromise the gut and feed these organisms, while healthy whole foods support a healthy gut environment.

food allergies/sensitivities

Immediate-reaction food allergies, called IgE allergies, are severe and life-threatening causing shock, shortness of breath, or an immediate rash or swelling, usually sending the victim to the emergency room or reaching for an Epi pen. Common allergenic foods are peanuts, tree nuts and shellfish. Lab tests are not needed to confirm these reactions and the safest remedy is strict avoidance of the food.

Food sensitivities, on the other hand, refers to delayed-sensitivity reactions (IgG reactions), and can cause delayed symptoms such as bloating, sleepiness, joint pain, skin rashes, acne, cough, fatigue or even brain fog and depression. Since these symptoms are not life-threatening, we refer to them as food sensitivities, rather than allergies. These are harder to identify, since the reactions might not show up for several days after eating the particular food allergen. The more common food allergens that cause these type reactions are wheat (or gluten), eggs, dairy and soy. Strict elimination diets with slow reintroduction of the suspected foods are the best way to identify these, although difficult for many people. If lab testing is preferred, then there are also a number of food allergy tests done with a finger-prick of blood and sent to a laboratory that tests reactions to 96+ foods. These tests are very helpful in identifying food sensitivities and provide evidence to encourage making dietary changes to improve your health.

what is gluten?

Gluten is a large protein found in wheat, barley and rye. Due to over-hybridization of the wheat in the US, the wheat that we now eat contains higher amounts of this protein. It is a large protein, difficult to digest and absorb for most, and some even say for all humans. Our digestive enzymes have a hard time breaking it down, causing irritation and inflammation all along the gut lining, eroding the protective mucosal barrier. This eroded barrier then allows undigested proteins and pathogens to enter the blood stream, compromising health in the form of small aches and pains, or debilitating fatigue and depression. Wheat and gluten are 2 foods included in most Food Allergy Panels.

Celiac Disease is the more severe form of gluten allergy where the immune reaction to gluten is so severe that the immune cells even attack the body's own intestinal cells—an auto (=self) immune reaction, destroying the entire gut lining. This is very rare, often genetic and related to other autoimmune diseases, especially Hashimoto's Disease and Diabetes Type I. It causes severe malnourishment, leading to chronic, debilitating disease. The diagnosis of this severe disease is confirmed by a celiac blood panel and biopsy of the intestinal lining.

There is an abundance of current research on the dangers of gluten. Many people have found their health improve when they eliminate gluten, sometimes in unsuspecting and pleasantly surprising ways. Less digestive upset, less joint pain, clear skin and clear thinking are some of the typical responses we hear.

leaky gut

Leaky gut is the serious consequence of an inflamed, irritated gut. Due to any of the factors mentioned above, such as food allergens, viruses, bacteria, parasites, the gut lining becomes so irritated that it allows large molecules and invaders to *leak* into the blood stream. Once the immune system sees these invaders, it mounts an immune response to attack and neutralize them. In the case of an acute episode, the immune system can put out the fire and subsequently heal. In the case of chronic exposure, the leaky gut never heals and the immune system never rests, leading to chronic inflammation throughout the body. The leaky gut must be repaired to restore the protective barrier and to calm down the immune system to allow the body to heal. Treatment is long-term, and involves a comprehensive protocol of dietary changes, supplements and medications.

autoimmune disease

For a more detailed discussion of autoimmune disease see the **Immune** section. Recent research shows the correlation between celiac disease and the development of some autoimmune diseases, including Hashimoto's disease and Graves' disease, two diseases that affect the thyroid gland. An irritated gut lining indicates a failure of this part of the immune system, burdening the internal immune system with the added job of fighting off large molecules and pathogens not meant to be found in the blood. Because we know that gluten irritates the protective gut barrier, it may be a factor in the initiation or exacerbation of the autoimmune process. Most Hashimoto's, Graves' and other autoimmune disease patients find that they feel better when they eliminate gluten from their diet, and they may even be able to lower their thyroid medication.

The two autoimmune diseases that specifically damage the gut are ulcerative colitis and Crohn's disease. These are very severe diseases which destroy the lining of the gut, causing painful digestive symptoms, often requiring surgery or toxic immunotherapy. Digestion and absorption of nutrients become severely compromised and may become life-threatening. Although these two diseases have a genetic component to them, they illustrate the importance of protecting the gut to support the immune system. With the right treatment protocol, the gut can be restored, thus making the toxic immunotherapy or surgery unnecessary.

digestion and absorption

While the immune system works to maintain the protective barrier in the gut, the rest of the digestive system must work to digest (break down) foods and allow the nutrients to be absorbed into the blood. This process begins in the mouth and continues all the way down through the gastrointestinal tract. It does this mainly through enzymes, which break down proteins, fats and carbohydrates into smaller amino acids, fatty acids and simple sugars. Then these nutrients can be used by the body for energy, repairing and building new tissue, such as red blood cells, immune cells, muscles, bones, brain cells... In reality, we really are what we eat!

hypochlorhydria (low stomach acid)

Although there is an abundance of over-the-counter and prescription antacids in most people's medicine cabinets, the use of antacids is actually counterproductive to healthy digestion. A healthy stomach creates a highly acidic environment by producing hydrochloric acid (HCl) to begin the process of breaking down proteins and fats. Without enough HCl, proteins can't be broken down to the smaller amino acids, and will be unavailable for use in the body thus causing the proteins to be absorbed whole with subsequent abnormal immune activation. The body therefore thinks the large proteins are an invading organism. The production of HCl declines due to an unhealthy diet and aging. Gas, bloating and often diarrhea occur to rid the body of these undigested proteins. In other words, these symptoms are most often due to a lack of HCl, not too much HCl. Furthermore, antacids drown out an already weak digestive fire, causing more discomfort. Dietary changes and specific digestive enzymes can resolve issues related to low stomach acid.

gastro-esophageal reflux disease (gerd)

In a healthy body, ingested food moves down the esophagus and enters the acidic stomach, closing the junction behind it, so that the esophagus never comes in contact with acid. When the stomach doesn't produce enough HCl, this junction becomes lax and acid leaks upward, destroying the more delicate tissue of the esophagus. The burning sensation of GERD can lead to destruction of the tissue and even cancer of the esophagus. However, antacids don't treat the cause—low stomach acid—and can cause severe nutrient and vitamin deficiencies, especially Vitamin B12. A complete GERD-preventive protocol may involve dietary changes, healing supplements, and digestive enzymes with HCl, while slowly reducing the dependence on antacids.

digestive enzyme deficiency

Digestive enzyme production decreases as we age. We see this commonly in the elderly, who become malnourished and weak due to the inability to digest and absorb nutrients. A healing gut protocol, along with supplemental nutrients, often in the form of IV nutrients to bypass the gut, and digestive enzymes with each meal, can help restore a weak body to health.

irritable bowel syndrome (ibs)

When any of the above conditions prevail—unhealthy diets, food allergies, digestive enzyme deficiencies, dysbiosis, autoimmune conditions—the gut reacts by either speeding up activity (diarrhea) or slowing it down (constipation). The ensuing problem is irritable bowel syndrome (IBS), dominated by diarrhea or constipation, or alternating between the two. A healthy gut should have at least one complete bowel movement daily.

vitamin deficiencies

Malabsorption, enzyme deficiencies, food allergies, leaky gut, and certain medications can all cause deficiencies in certain vitamins. We will test for the most typical deficiencies, while recommending supplementation of many vitamins and nutrients in the form of powders, capsules or injections.

gallstones, gallbladder disease

The gallbladder holds the bile that is produced in the liver, in preparation for breaking down fats that we eat. When the gallbladder gets overstressed from high fat diets, including the toxic trans fats, stones may develop which block its function. Dietary changes and supplements can help to optimize fat digestion and absorption. If the gallbladder is removed surgically, diarrhea is common after fatty meals, because of its impaired ability to digest fats. If you've had this procedure, taking digestive enzymes containing bile acids with meals can prevent diarrhea, allowing for proper absorption and utilization of fats.

blood sugar imbalances: insulin resistance/type II diabetes/leptin resistance

All blood sugar imbalances are caused by a diet high in simple carbohydrates (sugars). When sugar is consumed, the pancreas must respond by producing insulin, which escorts glucose into the cells to be used as energy.

Whole foods are full of healthy fats, proteins and complex carbohydrates, with very few simple carbohydrates, except those found in fruit, sugar cane, honey, etc. When we eat sugar, the body becomes overwhelmed by these unnaturally high amounts of glucose. This can cause energetic problems-- surges in blood sugar, followed by immediate plunges of devastating fatigue and sleepiness after eating these foods. If this is done repeatedly, the pancreas may not be able to produce enough insulin to shuttle the glucose into the cells. The excess glucose (Hyperglycemia) that remains in the blood agglutinates ("clumps") around red blood cells, causing inflammation and even cutting off circulation. In extreme cases of Diabetes, the low circulation leads to numbness and tingling in the toes and fingers, skin ulcers and eye diseases (the eyes are particularly sensitive to excess glucose).

Also, when the body is overwhelmed by sugar, the pancreas may produce enough insulin, but surges in insulin may overwhelm the cells, which become Insulin Resistant, blocking insulin and glucose from entering. Excess insulin causes the body to store fat, one of the many causes of weight gain. These pre-diabetic and diabetic states can be prevented and usually reversed with careful attention to diet and targeted natural and prescription therapies. Careful monitoring with simple blood tests, while avoiding all or most simple carbohydrates can bring these numbers

back into normal range. Many diabetic medications can also deplete the body of certain vitamins, especially Vitamin B12, which should be monitored and supplemented with either supplements or injections.

Whether or not weight loss is your goal, lowering blood sugar through diet and exercise is one of the most beneficial changes you can make for your health. Leptin Resistance is a slightly different dysregulation in the body. Leptin is a hormone produced by the fat cells which are programmed to signal the brain to feel full and burn fat. However, with obesity, the body becomes resistant to the action of leptin, and the excess levels end up actually blocking thyroid metabolism and blocking weight loss. Optimizing diet, increasing muscle mass to fat ratio through exercise, and weight loss will lower leptin levels naturally. Certain medications may also be indicated to lower leptin while reaching your weight loss goals.

detoxification

The third function of the gut is detoxification, your body's ability to neutralize toxins and rid them from the body. The majority of this process is performed by the liver. Everything that you eat, including supplements and medications that get absorbed into the bloodstream, makes a "first pass" to the liver which neutralizes any toxins and allows nutrients to be sent back into the blood stream and used by the body. In our highly toxic world of heavy metals, chemicals, genetically-modified and processed foods and overuse of pharmaceuticals, it has now been clearly shown that everyone has excessive levels of toxins in their body. Depending on the toxin, it can be stored in fat, tissues, organs and even bone.

Healthy diets include adequate proteins to give the liver the proper precursors for the detoxification pathways, healthy fats to restore our cell membranes and nerves, and antioxidants to mitigate oxidative stress. Exercise also speeds up detoxification by allowing toxins to be released through sweating, and through CO2 in our breath. In addition, there are specialized supplements and treatments that optimize healthy detoxification pathways to metabolize hormones.

toxic foods

Toxic foods include those foods that the human species has not been genetically programmed to handle. Many doctors consider **sugar** the number one toxic food. It is estimated that the average American eats over 150 lbs of sugar per year. It is now proven to be the major cause of obesity, and, of course diabetes. It affects the brain, as it contains addictive qualities, and can cause depression, ADD-like symptoms and behavioral problems.

Other refined food products have been stripped of their natural nutrient content, such as all processed flours and grains. The body is not designed to handle these refined foods in such high quantity. **Trans fats**, found in fast foods, and other processed foods such as salad dressings, replace the healthy fats in our cell membranes with stiff structures that destroy cell communications across the entire body. The brain is over 60% fat, thus trans fats can cause brain toxicity and cognitive decline.

A third toxic food is **high fructose corn syrup**, a more toxic form of sugar, which destroys the liver directly and further exacerbates the "Diabetes" epidemic. Although sugar does come from nature, the latter two are entirely man-made toxins unfamiliar to our bodies.

Other toxic foods include **gluten, refined oils and artificial sweeteners**. Most toxic foods are addictive and may cross the blood-brain barrier, causing mental problems including depression, behavioral problems, dementia, etc. The first step in detoxification is avoidance of these highly toxic foods.

environmental toxins

Environmental toxins include heavy metals such as mercury, lead, arsenic and cadmium. These are found in nature and we have natural processes to detoxify them and rid them from our bodies. However, through industrialization, the abundance of these metals end up getting stored in our body in fat, bone and other tissues.

Other environmental toxins include thousands of mainly petroleum-based organotoxins such as DDT, DDE, Phthalates, PCP, and triclosan, found in pesticides, household chemicals and even hand sanitizers. Non-organic foods are coated with pesticides and petrochemicals, so switching to organic foods can help eliminate exposure. Environmental Working Group (EWG.org) is the best resource for consumer lists of pesticides in produce, healthy cleaning and personal care products to help you sort through the maze of environmental toxins.

There are a variety of testing procedures for identifying toxins in the body. Whole blood toxic metal levels will show whether there is a current exposure—i.e. lead from toxic pottery, mercury from amalgams or seafood. To test total body burden of heavy metals, provocation testing must be performed using an oral supplement followed by urine testing. More complicated testing is also done using specialized labs for the fat soluble organotoxins.

When the liver becomes overwhelmed and unable to detoxify the abundance of toxins thrown at it, the remaining toxins are shuttled into different compartments in the body. Many toxins are fat soluble, so they get stored in the fat and the brain. Others destroy the mitochondria or get lodged in the bones and other tissues. The conditions known to be caused by toxicities are as varied as fatigue, obesity, osteoporosis, Parkinson's disease or brain fog.

avoidance

The first step in the detoxification process is avoidance. Especially in the case of toxic foods - eliminating sugar, HFCS, trans fats and white flour may be all that is needed to restore health in a toxic body. Removing all toxic chemicals from the house, removing mercury amalgams or root canals, purifying water, or moving away from a pesticide-rich agricultural community might be necessary to avoid environmental toxins.

diet and supplementation

The detoxification process involves 2 major steps in the liver: phase I and phase II reactions. Phase I converts toxic substances into other substances, then phase II neutralizes them before excreting them. Both of these processes require specific nutrients and enzymes to work. Many of these are found in our food, such as in cruciferous vegetables, onions, proteins and healthy fats. Without a healthy diet, detoxification is impossible. Supplementation with antioxidants, essential oils, minerals, and amino acids will also support a focused detoxification plan. Other therapies such as IV protocols, saunas, PEMF, and exercise may be recommended.

summary

Healing the gut is the first step toward becoming healthy. Without an intact intestinal barrier, our immune system is compromised and proper digestion and absorption of our nutrients is essential to create energy and healthy tissues. Finally, detoxification pathways must be well supported to thrive in our highly toxic environment.

tests/labs

Often gut dysfunction can be best assessed clinically. However, these tests may be included to pinpoint the source of your symptoms:

- Comprehensive metabolic (including fasting glucose and liver function tests)
- Hemoglobin A1C (HgA1C)
- Insulin
- CBC
- Iron
- Ferritin
- Folate
- B12
- Magnesium (RBC)
- Celiac panel (blood)
- Candida IgG
- H.Pylori
- Heavy metal testing
- Food Allergy Panel (96 foods including gluten)
- Comprehensive digestive stool analysis
- Parasite testing
- Pre-pregnancy nutritional and hormone testing

HoltraCeuticals™: pharmaceutical-grade, doctor-formulated

A variety of supplements might be recommended to you for optimizing the gut flora, enhancing digestive enzymes, resolving diarrhea/constipation, reducing inflammation and healing the gut lining. These could include:

- Allyzyme
- Aloe 450
- Biofilm X
- Cellular Support
- Crave Control
- Digestizyme B
- Gamma Globulin Plus
- IB Relief
- Gut Feeling
- Gut Feeling Max
- Magnesium Citrate
- Mito Immune

- Parasite X
- Phase II Detox
- Ultra Biotics
- Ultra Biotics Max

medications

In more severe cases, you may be prescribed medications such as the following antibiotic, antifungal, and antiparasitic medications to be obtained from your pharmacy:

- Rifaximin
- Nystatin
- Fluconazole
- Alinia
- Tindamax
- Limisol

Note: These medications will always be balanced with a comprehensive gut healing protocol.

diet

We've discussed a variety of conditions that affect the GI, all related to diet. A healthy diet gives us proper nutrients; stabilizes blood sugar; soothes the gut lining; and helps maintain a healthy weight. Some of the conditions mentioned in this section require strict control of simple carbohydrates, others require avoidance of certain allergenic foods, while others will require steady proteins to support neurotransmitter production for healthy moods.

Detoxification requires an ongoing healthy diet with targeted supplements to neutralize toxins. As we work together, we will guide you in the process of refining your diet for your particular condition. All healthy diets have one thing in common—no junk food, sugar, trans fats, or sodas or at least VERY little. Make healthy eating a life-long commitment and all your other systems will improve, guiding you on your path towards optimal health.



immune

brain

gut

hormones

mitochondria

immune system

The immune system is our internal, personal military force. It is designed to ensure our survival by strengthening our system, combating harmful organisms, and learning how to live in harmony with less harmful ones. A healthy immune system will be able to attack acute illnesses—perhaps mounting a fever, ridding the body of excess inflammation through the sinuses or flushing out the enemy through the gut. The strength of your constitution and genetic predisposition will determine whether you catch every flu or virus that comes your way, and whether you overcome it quickly or are knocked down for weeks on end. Current research is aimed at identifying particular genetic markers that might make you more susceptible to various diseases.

As you can see, The Holtorf Way is a multi-faceted approach to optimizing your health. So far, we've optimized your Thyroid, Adrenals, Hormones, Mitochondria, healed your Gut and cleaned up your diet. If you're still not feeling optimal despite considerable improvement in these areas, it's possible that you have been suffering from chronic infections and immune suppression. When specialized testing is utilized, these infections are found in 30-80% of CFS and FM patients, and many people with these syndromes can pinpoint the start of their disease to a viral infection that never got better usually during significant life stressors.

This can manifest itself in several different ways: either you are suffering from repeated colds and flus, have a constant sore throat, continual low grade fever, afternoon fevers, or perhaps your immune system has been so weakened by chronic infections that it can't even mount a fever, and you might even have a low body temperature. The next step is to order an array of lab tests to assess the state of your immune system. Some tests will describe the general state of your immune system—the degree of inflammation, or the levels of certain immune cells, such as Natural Killer Cells and Immunoglobulins. Others will detect reactions to specific viruses, fungi and bacteria either present in your body, or occurring in the past.

In the case of chronic infections, lab tests can be inconclusive at best, but the sum total of test results might point us in the right direction as to the cause of your illness. There is controversy surrounding the diagnosis of chronic infections, although there is considerable research pointing to these viruses, fungi and bacteria as contributing factors in the development of chronic disease. Let's look at some of the possible culprits in the disease process.

fungi/yeast

We already discussed Candida in the definitive discussion of immune dysregulation of the Gut. Candida symptoms involve primarily the gut, but can also appear as fatigue, generalized joint pain, skin rashes, headaches, brain fog and depression. The testing for Candida is not definite, but an anti-Candida protocol can often clear up many of the symptoms of chronic fatigue syndrome or fibromyalgia.

molds

Molds are similar to Candida in their effect, but they are usually due to environmental exposure—a moldy house, office or other living environment. Treatment involves mold removal done by expert contractors, as well as internal protocols to flush the molds out and strengthen the internal environment as well as immune modulation.

viruses

Viruses act differently than bacteria. Instead of circulating through the blood, they actually go inside our cells, merge with our DNA and multiply there. As such, antibiotics are ineffective at killing them. When our body heals from viruses, they actually still remain inside our body, but they have been deactivated, and our immune system recognizes them and keeps them at bay. However, as your immune system becomes more compromised and over burdened, the viruses continue replicating and weaken the body. The Stanford School of Medicine Treatment Center for CFS has found that active Epstein-Barr virus (EBV), active Cytomegalovirus (HCMV), active Human Herpesvirus 6 (HHV-6), are common in patients with chronic fatigue syndrome, either as an ongoing infection or a reactivation of a past infection.

(chronicfatigue.stanford.edu)

The acute form of these viruses used to be called “Mononucleosis” or Epstein Barr Virus (EBV), the debilitating fatigue which you or your friends may have contracted as a teenager. Most individuals recover and live a healthy adulthood, however many CFS patients report never feeling well since their teenage years when they contracted EBV. The shared symptoms of these viruses are fatigue, pain, chronic flu-like symptoms and chronic sore throat. There are lab tests that indicate the presence of a past virus, and, although not conclusive, may be able to determine if the virus is currently replicating. Treatment involves bolstering the immune system with immune-supporting therapies and possible anti-viral medications and supplements.

bacteria

Bacteria are foreign organisms found in the blood. An acute infection will manifest in severe symptoms that appear quickly, such as swelling, redness, pain and fever. If the cause is bacterial, it may show up on blood tests as an elevated white blood cell (WBC) count, or in a culture that identifies the specific bacteria, as in a strep throat swab. We recommend you have a primary care physician on hand to respond to these acute infections, or to go to the ER if severe symptoms arise quickly.

At Holtorf Medical Group, many of our patients have been suffering for years with chronic flu-like symptoms. As discussed above, these are often due to recurrent viral infections, but there may be a bacterial cause as well. These chronic infections often suppress the immune system, therefore never raising blood tests out of range. Also, a suppressed immune system is often not even strong enough to cause a fever, so the symptoms themselves don't appear as a typical infection. There are, however some lesser known tests that can assess the state of your immune system (Complement C4a, Natural Killer Function, IgG subclass, ECP, VEGF, CD57, etc.). When these tests are abnormal we suspect infection, and our next job is to identify the cause. Further testing of various bacteria may be ordered to identify the bacterial culprit. A couple of examples are *M.pneumoniae* and *C.pneumoniae*, two bacteria that cause atypical or “walking pneumonia”, a mild case of pneumonia that may cause a chronic cough for 4-6 weeks, but no fever. Bacterial infections are most often treated with antibiotics, along with immune supportive therapies, including oral supplements, herbal therapies, IV therapy, ozone, etc.

chronic lyme disease and other tick-borne diseases

Lyme disease is a disease caused by a tick bite and, in some cases, mosquitoes, fleas, in utero, and potentially via sexual contact, containing the bacteria *Borrelia burgdorferi*. Acute symptoms include a bulls-eye skin rash followed by flu-like symptoms. If left untreated, the bacteria disseminates to other tissues, including the heart, brain, nerves, joints, muscles, and eyes. The diagnosis and treatment of Lyme disease is a controversial matter, polarized by two organizations IDSA (idsociety.org) and ILADS (ilads.org). IDSA declares that Lyme disease is rare, easy to treat with short-term antibiotics, and that there is no evidence of chronic Lyme disease. On the other hand, the ILADS guidelines state that Lyme disease is persistent, difficult to diagnose and

treat, and there is evidence of chronic Lyme infection. The argument is too complex for the purpose of this booklet, however we follow the guidelines of ILADS, and have seen thousands of patients who have suffered for years with severe symptoms of chronic Lyme disease.

Laboratory testing is becoming more sophisticated and sensitive, with some lab values proving a chronic infection, however in some cases diagnosis is not a black-or-white decision based on absolute lab values. Furthermore, only 17-25% of patients with the bulls-eye rash recall a tick bite, while less than 50% of patients with chronic Lyme disease ever recall a tick bite or a rash. We take a comprehensive approach to diagnosing and treating Lyme disease, optimizing the core systems of the body as presented in The Holtorf Way, while aggressively supporting the immune system and attacking the offending bacteria. Furthermore, there is evidence of a series of other bacteria also found in the saliva of infected ticks, and these infections must also be diagnosed and treated. The commonly tested co-infections include Bartonella sp., Babesia sp., Ehrlichia chaffeensis, Anaplasma phagocytophila and Rickettsia rickettsii. If you have been recently bitten by a tick, immediate testing and treatment can prevent long-term consequences. And if you have been suffering for months or years with chronic symptoms, we will engage in an aggressive search for the cause of your disease, which may be Lyme and other tick-borne diseases.

parasites

Parasites are larger organisms (spore-like organisms and worms) that invade our body, usually causing acute digestive symptoms. However, they can also persist chronically both in the gut, and invading other tissues and organs. Comprehensive stool tests to detect for the presence of parasites may be ordered if you are suffering from these symptoms. Antiparasitic treatments include pharmaceutical medications and strong herbal formulas. The newest research points to the fact that a wide-variety of protozoal infections may be at the root of the many common chronic illnesses such as CFS, FM, autoimmune diseases, arthrosclerosis and other neurodegenerative diseases.

allergies

Food allergies/sensitivities were discussed in the Gut section. They often form the foundation for other allergies. For example, a sensitivity to dairy usually causes sinus congestion, and might be misinterpreted as seasonal allergies. Reducing or eliminating dairy for some people is the key to eliminating environmental allergies.

True environmental allergies may reflect an immune system suppressed by other chronic infections. On the other hand, an imbalance of two branches of the immune system: Th2/Th1, can set up an immune system that is hyper-reactive to substances in the air that would ordinarily not cause harm in a healthy, balanced immune system. Immune-balancing therapies and supplements, dietary changes and optimal hormone levels can reduce one's hyperactive allergy response. In addition, we offer LDA (Low Dose Allergen) treatments, a series of subdermal injections done bi-monthly, which neutralize hundreds of allergens including environmental pollens and grasses, other inhalants such as dust and dander, and chemicals such as printer inks and cleaning products. These treatments have proven to be life-altering for many who suffer from allergies.

biotoxins

Biotoxins are toxins released in the blood by other organisms, such as the viruses, fungi and bacteria that we are discussing. They may come in many forms, have diverse sources and affect different parts of the body. Mycotoxins are the toxins released by molds, yeast and fungi, which can also do direct damage to your system, especially sinuses and mucous membranes. Newer testing is evolving in the diagnosis of these mycotoxins, and treatment may involve long-term oral and/or nasal antifungal medications and supplements. Neurotoxins are those toxins that affect the brain, nerves and eyes, causing changes in vision, as well as, mental/emotional symptoms.

biofilm

As a protective mechanism and to insure its own survival inside the human body, bacteria create a protective, slimy film around itself called Biofilm. Biofilm lines any mucosal membranes: the gut, nasal passages, as well as blood vessels. Most antibiotics cannot penetrate this layer, so bacteria continue to divide and attack its human host. Treatment involves supplements containing essential oils, enzymes and specific medications that break down the biofilm and help rid it from the body. Biofilm may go hand in hand with the fibrin layers of Coagulation Defects discussed in the Heart section of The Holtorf Way, and may involve blood thinners as part of a comprehensive treatment plan.

auto-immune

Auto-immune conditions are a result of the immune system gone awry. The immune system begins attacking and breaking down tissue of the body, rather than just enemy pathogens. Most auto-immune conditions have a chronic infection driving the immune dysregulation. Research is aimed at identifying gene alterations and gene types which are prone to these auto-immune diseases. More importantly, the study of “Epigenetics” shows that lifestyle factors, such as diet and exercise can also support the body’s own immune system to prevent the body from turning on these defective genes. We’ve already mentioned Hashimoto’s disease and Graves’ disease, two autoimmune diseases that affect the thyroid gland. There are dozens of other autoimmune diseases which have deleterious effects on the whole body, such as systemic lupus erythematosus, rheumatoid arthritis, ulcerative colitis, Crohn’s disease and multiple sclerosis. In many cases, as shown previously, there may also be complicating viral and bacterial infections.

tests/labs

There are many blood tests that indicate immune dysfunction. Some are included in basic blood panels, while others need to be special ordered through independent laboratories with a separate serum lab kit. These tests indicate the general state of your immune system and the presence of inflammation/infection:

- Complete Blood Count (CBC)
- HS-CRP
- Sedimentation rate
- C3(A)
- C4(A)
- Natural Killer Functional Assay
- Immunoglobulin subclasses
- PAI-1 Antigen
- Viral Infections:
 - ♦ EBV Viral Panel
 - ♦ CMV IgG/IgM
 - ♦ HHV-6
- Fungi:
 - ♦ Candida IgM/IgA
 - ♦ Toxic mold panel
- Bacteria:
 - ♦ C. pneumoniae
 - ♦ M.pneumoniae
- Possible markers of Lyme Disease and Co-Infections:
 - ♦ VEGF
 - ♦ Eosinophil Cationic Protein (ECP)

- ◆ Wa1
- ◆ CD-57
- ◆ Lyme WB
- ◆ IGENEX Complete Lyme Panel
- ◆ IGENEX Co-Infection Panel
- ◆ Advanced Lab Borrelia Culture

Note: See the Gut section for celiac disease, gluten sensitivity and food allergy tests.

medications

You may be prescribed one or more medications to combat these fungal, bacterial and parasitic infections, such as:

- Antifungals (Nystatin, Fluconazole)
- Rifaximin
- Antibiotics (various)
- Antiparasitics (Alinia, Metronidazole, Tinidazole)
- Cholestyramine
- Low Dose Naltrexone (LDN)

HoltraCeuticals™: pharmaceutical-grade, doctor-formulated

Many supplements, botanical herbs and essential oils have strong antiviral, antifungal, antibacterial and antiparasitic properties. These may be useful in your treatment plan:

- Argentyn Colloidal Silver - liquid, nasal spray, topical gel
- Artemisinin
- BiofilmX
- Byron White formula herbs
- Candinex
- Fibrinex
- Immunostim*
- Immunovir
- MitolImmune
- Nutramedix formula herbs
- ParasitX
- Regenapep/Myopep
- Transfer Factor
- Placenta
- Thymus
- Virunex
- X-Hist

*Stimulates TH1 immunity, lowers TH2 immunity, which is why as “immune booster” may be beneficial for autoimmune diseases.

non-oral medications

Medications can also be delivered intravenously through a slow IV drip into your veins, intramuscularly (IM) as a shot in the muscles, or subcutaneously (SC) as a shot in the fat. These can be more powerful than oral medications, because they deliver medicines and nutrients directly into the bloodstream, without the need to be broken down by the gut and passed through the liver. Your protocol may include a combination of these treatments.

intramuscular (im) and subcutaneous (sc) injections

- B12 Special
- Lipo B
- Heparin
- PC and PPC Thymus
- Regenapep
- Myopep
- Antibiotics
- Gammaglobulin
- Carimune
- Cell Therapy

intravenous (iv) therapies

We utilize a wide range of custom IV therapies that are individually tailored to the needs of each patient, whether for energy, pain, immune function, detoxification or for attacking viruses, bacteria or yeast.

IV therapies could include:

- Power Push
- Immune Push
- Gold Standard
- Argentyn: Colloidal Silver
- Oxidative H2O2
- IVIG (Gammaglobulin)
- Carimune
- IV Antibiotics
- Cell Therapy

other protocols

We continually review the latest research, evaluating and implementing cutting-edge therapies, as they are shown to be effective both in the literature and clinically. As of this date, some of our current therapies that are showing great results are:

- Ozone rectal insufflation
- Pulsed Electro Magnetic Frequency (PEMF)
- LDA: Low Dose Allergen Treatments
- Cell Therapy
- Voltage Biomodulator

notes

20 horizontal lines for taking notes.



brain

heart

stria

immune

gut

hormones

stria

brain

At Holtorf Medical Group, we are concerned about your mental and emotional health as well as your physical health. A healthy brain creates positive mood and clear thinking, while an imbalance in the other aspects of your body's system can have negative consequences on the brain, such as short and long-term memory loss, poor clarity and focus, ADHD, brain fog, cognitive decline, anxiety and depression, to name a few. We will ask you about any mental or emotional symptoms you might be having, then we will focus on treating the root cause. The cause could be anything from hormonal deficiencies, neurotransmitter imbalances, thyroid disorders, infections, or a combination of all of these. Let's categorize the conditions of the brain that could be impacting your life:

- Mental
- Emotional
- Neurological

mental

The mental aspect of the brain refers to our executive functions: learning, memory, and attention. A healthy brain produces good memory, sharp focus and optimal learning skills.

brain fog/memory loss

Many patients describe their mental symptoms as “brain fog”. They feel as if they're in the middle of a cloud obscuring clarity of thought. Other patients say that they used to have a razor-sharp memory and now they're grasping for words and forgetting names. Hypothyroidism, adrenal insufficiency, neurotoxins, inflammation, chronic infections and hormonal deficiencies can all cause mental deficits. As we optimize these other areas of your system with bioidentical hormones, medications, supplements and lifestyle changes, we expect to see improvement in mental focus and attention.

add/adhd

Diagnoses of Attention Deficit Disorder (ADD) and Attention Deficit Hyperactive Disorder (ADHD) are on the rise. Usually these are diagnosed in children, but the symptoms may persist into adulthood. Please let us know if you were ever diagnosed with ADD or ADHD, or if you're having any noticeable changes in your ability to focus. Dietary changes along with neurotransmitter and hormone balancing can often help these conditions. And in the case of severe ADD, medications might be necessary to reestablish attention and focus.

cognitive decline/dementia/alzheimer's disease

As the Baby Boomers are aging, Alzheimer's disease, dementia and cognitive decline are increasing. Research demonstrates that Alzheimer's disease is a result of inflammation, even calling Alzheimer's disease “Type 3 Diabetes”. There is other research focusing on brain

shrinkage, genetic factors, Tau proteins, chronic infections and plaque as contributing factors. The female and male hormones, as well as the adrenal hormones, DHEA and pregnenolone are neuro-protective and should be optimized to prevent cognitive decline. Sustaining a healthy brain involves optimizing diet and supplementation, increasing mental and physical exercise, optimizing hormones, and clearing any chronic infections.

insomnia

Sleep is essential for optimal cognitive function. If your insomnia is severe, we may prescribe sleep medications and supplements initially, while we take time to treat the other systems of the body. Balancing your energy through the adrenals, thyroid, mitochondrial function and hormones will resolve many sleep issues. However, if your sleep is still not deep and restorative, further investigation into possible infectious components might be necessary.

headaches/migraines

There are a myriad of causes of headaches and migraines which need to be investigated, such as hormonal changes, dehydration, vitamin deficiencies, hypertension, food allergies, hypo- or hyperthyroidism and infections. If you are suffering from severe or chronic headaches there are many approaches to resolving them without always resorting to Excedrin or migraine medication.

emotional

The most common emotional conditions that our patients are concerned about are depression and anxiety. Severe combinations of these create bipolar disease. These conditions may be mild and slightly disconcerting to you, or they may involve a life-long diagnosis which has hindered your lifestyle. While this is not meant to be a complete discussion of psychiatric conditions, depression and anxiety are common conditions that we treat.

depression

Depression affects more than 19 million Americans each year, and women are diagnosed twice as often as men. Depression can range from mild dysthymia as seen in hypothyroidism, to Seasonal Affective Disorder (SAD), or major depressive disorder. Although depression is a mental illness, its cause may be multifactorial. Women suffer from depression and anxiety at various times throughout the menstrual cycle, after childbirth (postpartum depression), and again at menopause. All of these forms of depression are a result of unbalanced and/or deficient female hormones, and can be minimized with proper treatment.

Most theories of depression point to deficiencies or imbalances of the neurotransmitters serotonin, GABA, dopamine, norepinephrine, and epinephrine. Selective Serotonin Reuptake Inhibitors (SSRI's) are routinely prescribed by primary care physicians and mental health providers, however most research shows only about 30% efficacy with these medications. Furthermore, in the Star*D study, thyroid medication in the form of T3 was more effective than anti-depressants and works when anti-depressants have little or no effect. While anti-depressants are helpful for some, simply re-circulating serotonin (by using SSRI's) will be ineffective if the levels of serotonin are too low to begin with. A deeper investigation is required to identify the cause of the deficiency. Genetic factors, dietary factors, vitamin and mineral deficiencies, and hormonal deficiencies can all cause neurotransmitter imbalances.

Balancing hormones and restoring deficiencies can resolve depression, preventing the need for SSRI medications. Furthermore, if your depression is accompanied by other physical symptoms, such as fatigue, insomnia and/or pain, treating the cause is much more effective than masking symptoms with anti-depressants.

when it's not really depression

In this era of 10-15 minute office visits with primary care physicians, patients' concerns are often minimized or dismissed as depression. If you have serious concerns about your health such as weight gain, fatigue, pain, insomnia, or any unusual symptom that seems unexplainable, we will take your concerns seriously, search for the cause and design a comprehensive protocol to bring you back to feeling your best self again. We find that restoring the deficiencies of thyroid, adrenals and hormones often reduces the need to prescribe psychiatric medications.

anxiety

The other side of the coin of depression is anxiety. While it is most likely also a neurotransmitter imbalance, the root of that imbalance may be found in more than one system of The Holtorf Way. Anxiety, irritability or panic attacks may arise due to adrenal, thyroid, hormonal imbalances or chronic infections. While hypothyroidism usually causes depression, it can also cause anxiety.

An imbalanced daily output of the adrenal hormone cortisol can also cause anxiety, especially if it occurs at night. Hypertension and rapid pulse are hallmarks of cardiovascular disease, but can also be misinterpreted as anxiety or panic. Cyclical hormonal patterns during PMS or hormonal deficiencies during perimenopause and menopause can initiate new feelings of irritability, anxiety and panic, often accompanied by insomnia. If you've suffered lifelong anxiety, or you're having new onset of any of these symptoms, the cause may be found and treated in a comprehensive treatment plan.

neurological

The nervous system is composed of two systems: the central nervous system (CNS), which includes the brain and spinal cord; and the peripheral nervous system, which includes the nerves in the rest of the body. Nerves carry information to and from the brain to muscles, skin and organs.

pns conditions

Peripheral nervous system symptoms may manifest as anesthetics (numbness), paresthesias (tingling), or neuropathic pain and may be the result of vitamin deficiencies, blood sugar abnormalities, hormonal imbalances, infections or toxins. Those suffering from chronic fatigue syndrome and fibromyalgia often feel trapped in a vicious cycle of fatigue, pain, and immobility, leading to more pain and more immobility. In severe cases, pain medications may be necessary to block the cycle, until the other systems are optimized. If you are suffering from chronic pain, pain that comes and goes, or pain that travels randomly through the body, a thorough thyroid, adrenal, hormonal and immune investigation is necessary.

cns conditions

Central nervous system conditions manifest as brain fog, poor memory, pain, headaches, vertigo, abnormal gait, tremors or disturbed mental function. While these diagnoses are descriptive, they do not declare the cause of the brain dysfunction, which may be chronic infections such as chronic Lyme disease, or toxicities such as those mentioned in **Gut: Detoxification**. A complete investigation into deficiencies, toxicities and infections may pinpoint the cause so that treatment can minimize disease progression.

HoltraCeuticals™: pharmaceutical-grade, doctor-formulated

The brain is nearly 60% fat, especially dependent on essential fatty acids. Omega 3 oils found in fish are essential for brain health. In a study in 2003, cod liver oil taken by women during pregnancy and breast-feeding even increased IQ of their children as measured at 4 years old. Neurotransmitters must also be optimized in the case of mood disorders, while researched supplements have been shown to positively impact various mental and emotional defects.

The following supplements can be used to help optimize your brain health:

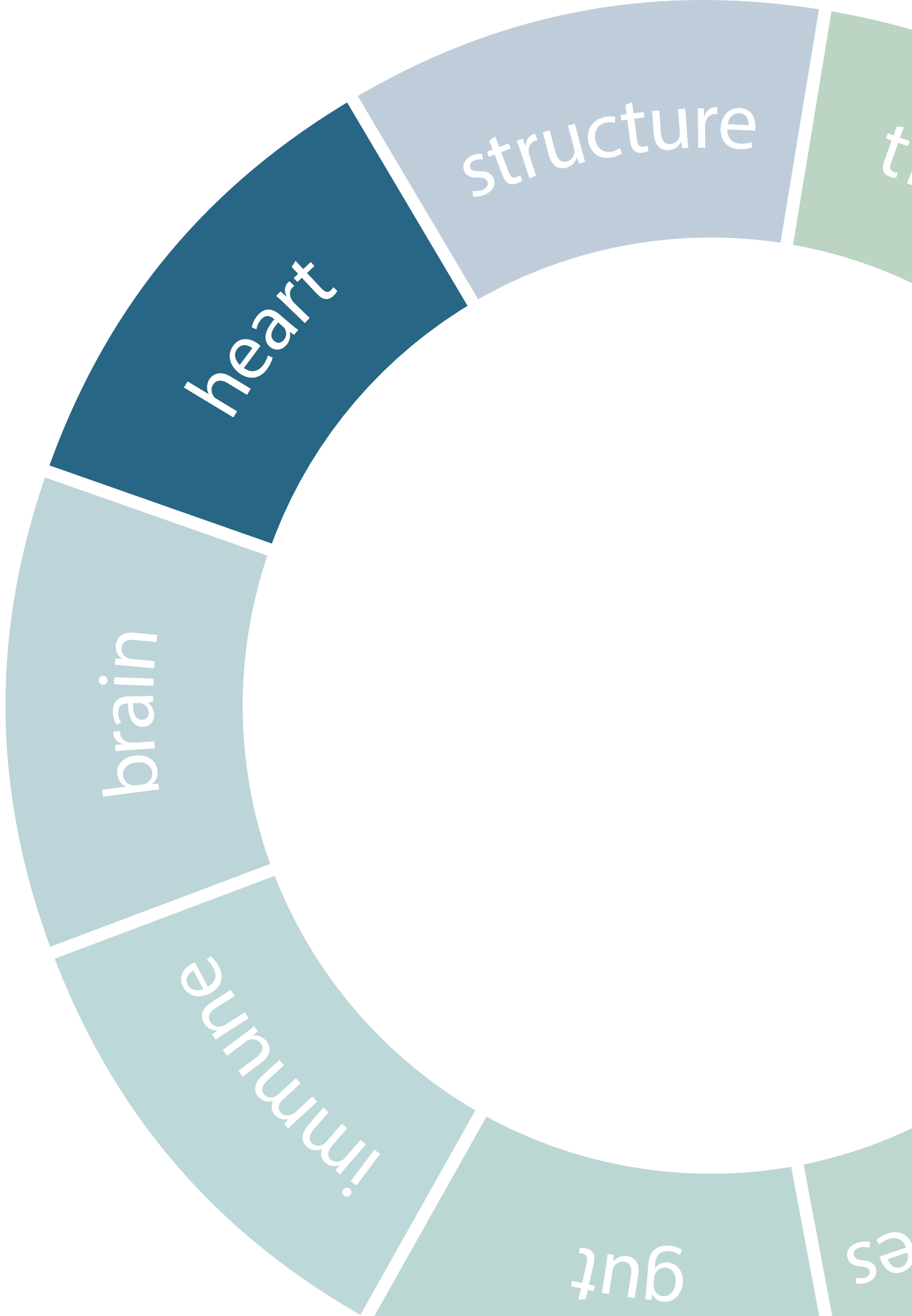
- B12 Methyl Factors
- Chill Pill
- Crave Control
- Enhansa
- HPA Balance
- Max B
- Melatonin
- Mito Immune
- Multiplex
- Neuro Protect
- Relax Max
- Remember Me
- Sleep Tight
- Ultra Omega

medications

We search to find the root cause rather than use psychiatric or pain medications as a Band-aid to cover any mental, emotional or neurological symptoms. The bioidentical hormones listed in the Thyroid, Adrenals, and Hormones sections may be prescribed if you also have symptoms and deficiencies relating to those systems alongside your brain deficits. In more severe cases, or perhaps only initially to reduce debilitating symptoms, we may prescribe psychiatric or pain medications. If you are currently on either of these, we will advise you to stay on your medication and wait to consider slowly titrating down with medical supervision only if you feel stable and they no longer become necessary. These may include antidepressants, anxiolytics, anti-seizure medications, mood stabilizers, ADD medications, or pain medications. Optimizing brain function will begin with balancing hormones and treating infections.

You may be prescribed any of the following:

- Thyroid medication (see Thyroid)
- Bioidentical hormones, such as estrogen, progesterone, testosterone (see Hormones)



heart

Heart disease is the leading cause of death for men and women of all ethnicities in the United States. Prevention is the key, with early diagnostic testing and lifestyle changes along with anti-inflammatory measures. We may recommend a full work-up with a cardiologist, especially if you are middle-aged, along with our comprehensive treatment.

hypertension (high blood pressure)

Blood pressure (BP) is one of the vital signs measured at every doctor's visit. Often due to nervous "white-coat syndrome," the measurements seem falsely elevated in some patients. However this should not be dismissed, because if your blood pressure is high in the doctor's office, this indicates that when you feel stressed, your blood pressure rises, while for others their BP may not rise as much under stress. Normal BP is considered 120/80 or lower. Furthermore, it is probable that your blood pressure rises throughout the day, raising your risk of cardiovascular disease. In people under 45, high BP is more prevalent among men than women, but the reverse is true over 65. In both sexes, BP naturally rises with age: 64% of men and women over 65 have high BP. There can be contributing factors, such as obesity, smoking, inactivity, excess alcohol and an inflammatory diet. While blood pressure medications may be necessary, a better approach to lowering BP would be to address the cause and lower inflammation. Losing weight, restoring vitamin and mineral deficiencies and taking botanical supplements can assist the balancing of BP. High BP raises the risk for heart attack, stroke and death, so a complete health and lifestyle plan should be undertaken.

heart palpitations/tachycardia/afib

Any change in heart rate or rhythm should be addressed. **Heart palpitations** can occur in a myriad of conditions: dehydration, vitamin and mineral deficiencies, menopause, hypo- and hyperthyroidism, food sensitivities and cortisol/adrenaline imbalance. An increased or irregular pulse (**Tachycardia, Atrial fibrillation**) can cause the blood to pool, which can form clots and raise the risk of stroke, so if your heart rate becomes elevated for any reason, immediate medical attention is necessary. If you are on thyroid medication, increased heart rate can be indication that your medication is too high. If this occurs, stop the medication entirely for 3-4 days while you call us, and we will lower or discontinue your medication. Being aware of your heart rate is part of managing heart health. As a convenience, there are apps which easily check your pulse on your cell phone.

myocardial infarction (heart attack)

Every year, about 720,000 Americans suffer from a myocardial infarction (MI). Of these, over 2/3 are first or new MI's, and the rest are in those who've had a previous attack. We've all been educated to recognize the signs: chest pain, upper arm/neck pain, shortness of breath, nausea, light headedness or cold sweats. While men are at higher risk, most women don't realize that heart disease is the #1 killer for both genders. Furthermore, 64% of women who die suddenly from a heart attack had no previous symptoms. This accentuates the need for an extensive assessment and an aggressive preventive heart health plan. Let's discuss the various factors involved in preventing heart attacks.

high cholesterol

Since 1996, when Lipitor, a cholesterol-lowering medication called a statin, was introduced into the market, there has been a frenzy to monitor and lower everyone's cholesterol in order to prevent heart attacks and death from heart disease. However, this approach has proven through medical research, to be heading down the wrong path. Statins may be life-saving for men who've previously suffered a heart attack, although most likely due to the anti-inflammatory and blood thinning effects of the drug. It has been shown that statins provide no benefit for people over 65, for women of any age or anyone without significant heart disease.

In clinical trials, middle-age men seemed to benefit the most from statins, lowering their risk of heart attack, however there was no reduction in their overall mortality. Even if statins are successful for some, the number needed to treat (NNT) has been shown to be 100. That means 1 less person will suffer a heart attack from taking a statin, while 99 will have no benefit.

The 2011 HUNT study in Norway (50,000 people followed for 10 years) found that the women with the highest cholesterol levels had the *lowest* rate of mortality. This brings into question the entire cholesterol theory of heart disease. In addition, the side effects of statins are great as discussed in **Mitochondria**: muscle weakness, depression, memory loss, mitochondrial dysfunction and liver damage.

Furthermore, hypercholesterolemia is often the result of another underlying cause: hypothyroidism. For that reason, guidelines from the American Association of Clinical Endocrinologists (AACE), American Thyroid Association and National Cholesterol Education Program all recommend testing for hypothyroidism in cases of hypercholesterolemia. We have been testing and treating this way for years, while at a 2013 AACE convention, it was shown that only 49% of primary care physicians even ordered a TSH test for these patients.

Rather than just look at total cholesterol, we order a comprehensive cardiovascular risk blood panel that tests lipids as well as other risk factors for heart disease such as C-Reactive protein, Homocysteine, Lp(a), blood sugar abnormalities, genetic predisposition and omega 3 status among others. Furthermore, we help our patients to make lifestyle changes to lower overall risk.

inflammation/metabolic syndrome

If cholesterol is not the culprit in heart disease, then what is? Inflammation. As we discussed in the **Immune** section, treatment must be aimed at correcting the cause of the inflammation: blood sugar abnormalities, oxidative stress, viruses, bacteria, toxins, vitamin deficiencies, stress and genetics.

The chronic inflammatory state of an unhealthy individual has been summed up with the diagnosis of Metabolic Syndrome:

- Obesity: waist size over 35 in women, 40 in men
- High cholesterol
- High blood sugar and insulin
- High blood pressure

These markers increase the risk of both heart disease and Diabetes. So now we're getting a picture of how all systems of the body are interrelated. Heart disease is connected to the blood sugar/insulin

abnormalities that we discussed in the **Gut** section, and Alzheimer's disease (**Brain**) has been given the name of Diabetes Type3, also due to its connection to blood sugar as well. The common denominator in this link between **Heart-Gut-Brain** is inflammation. The Holtorf Way works on all these systems simultaneously to reduce inflammation and optimize all aspects of your health.

plaque/clots/stroke

A silent warning of heart disease is the build-up of plaque, which narrows and stiffens the arteries, and raises the risk of a clot, which may dislodge and cause a pulmonary embolism (lung clot) or stroke. We assess the state of this arterial plaque by ordering a vascular ultrasound which measures the plaque in the neck (carotid artery), hip (femoral) and knee (popliteal) and checking for a balloon-like bulge (aneurysm) in the aorta. This, along with other testing such as calcium score, echocardiogram, and EKG shows us the state of your arteries and your risk of stroke as a guide for how aggressive your treatment protocol should be.

coagulation defect

Our coagulation system is a complex matrix that when active, stops bleeding at the site of an injury, so that we don't bleed out, but when hyperactive, may form clots, increasing the risk for stroke. 80% of CFS, FM and Lyme (especially babesia) patients have a chronic, low level activation of this clotting system. This low level activation does not form a clot, but rather an intermediate substance called a soluble fibrin monomer (SFM) along the blood vessel walls, limiting oxygen and nutrients from reaching the cells.

One of the clinical signs caused by these SFMs is brain fog and "air-hunger" or difficulty getting a full breath of air. This hypercoaguable state may be a result of a genetic predisposition—to overproduce SFM and/or to the inefficient breakdown of the SFM. Viruses, fungi, and bacteria (including Lyme) stimulate the production of the SFM and use it as a protective coating to evade the immune system. A coagulation defect may be the last obstacle to getting well in the case of chronic infections. A specific Thrombotic Marker Panel will be ordered, and a protocol involving proteolytic enzymes and low dose heparin will break down the fibrin layers, so that antiviral and antibiotic medications can now attack and rid the body of the offending organisms. This is one of the most successful treatments in a comprehensive CFS, FM and Lyme disease protocol. A common reaction we hear from patients on this protocol, is "I feel like all the treatments are finally working."

labs/tests

- In house testing:
 - ◆ Vital signs: Blood pressure and Pulse
 - ◆ Vascular Ultrasound: Recommended for anyone over 50
 - ◆ Measurement of plaque in the Carotid Arteries, Aorta, and Peripheral Arteries (Femoral, Popliteal)
 - ◆ Thyroflex
 - ◆ BMR
 - ◆ Urine Iodine
- Comp Metabolic
- HgA1C
- CBC
- B12

- Leptin
- Folate
- Ferritin
- Magnesium, RBC
- Thrombotic Marker Panel, including d-dimer
 - ◆ Health Diagnostics Cardiovascular Panel - An 8-page comprehensive blood test testing dozens of markers of cardiovascular disease including:
 - ◆ Lipids (Cholesterol)
 - ◆ C Reactive Protein
 - ◆ Homocysteine
 - ◆ Fibrinogen
 - ◆ Lipoprotein (a)
 - ◆ Omega 3 Score
 - ◆ MTHFR SNP
- Heavy Metals Testing
- If necessary, Referral for Cardio workup (Treadmill Stress test, Holter Monitor, EKG, Echo, CT Calcium Score)

HoltraCeuticals™: pharmaceutical-grade, doctor-formulated

Heart-healthy supplements aim to restore nutritional deficiencies, rid the body of toxins, balance blood sugar, lower blood pressure and reduce coagulation. Here are some of the proven supplements we recommend:

- BP Calm
- B12 Methyl Factors
- Cardio Calm
- Chol-Less Max
- CoQ10 Plus
- Fibrinex
- Heart Solutions
- Max B
- Magnesium Citrate
- NO Max
- Ribomax
- SR Niacin
- Ultra Omega

diet

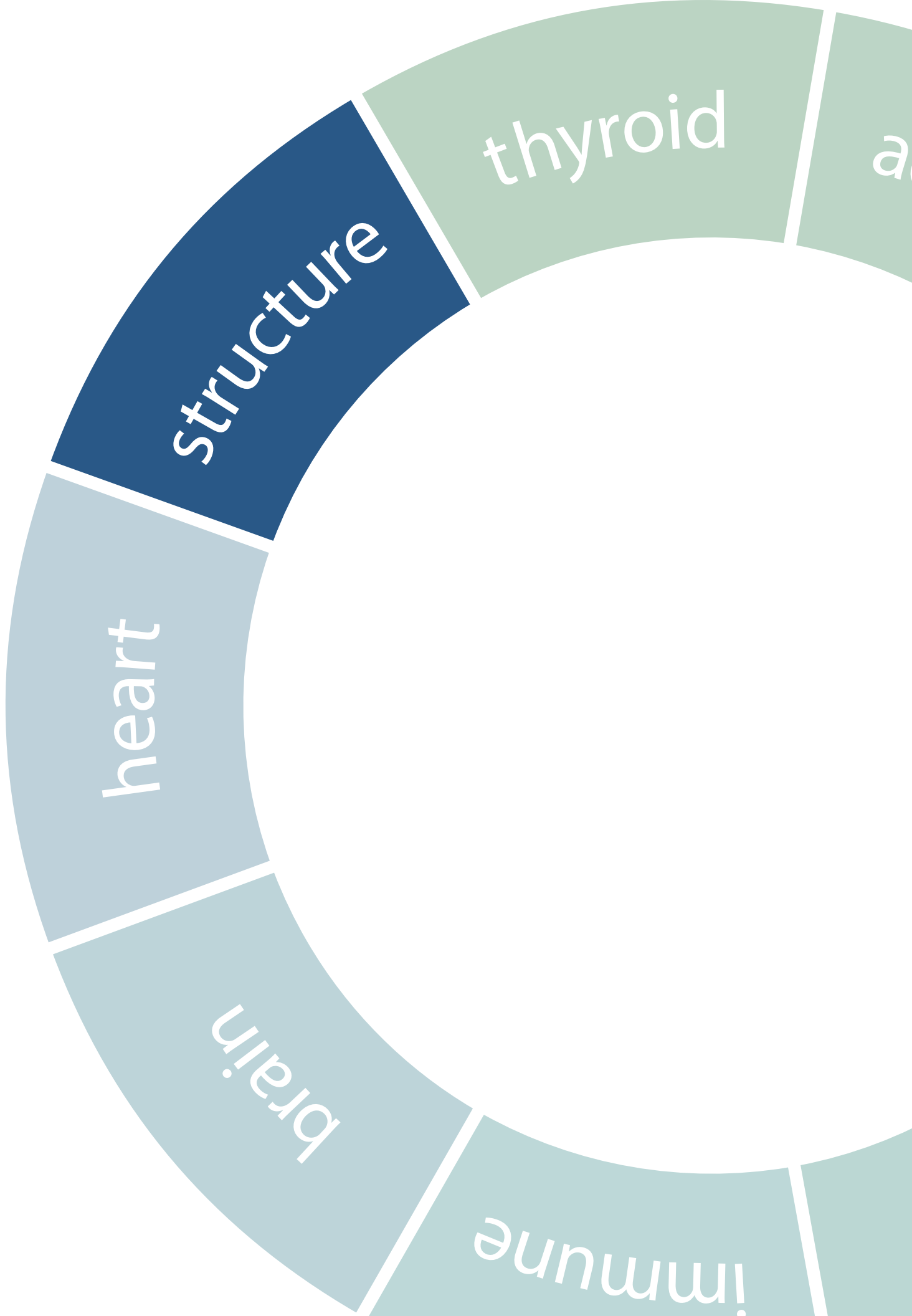
A healthy, anti-inflammatory diet is non-negotiable for heart health. Blood sugar must be balanced and toxic foods must be eliminated in order to lower weight and blood pressure. There are many competing fad diets in the news, but they all have a few things in common: no junk food, no sugar, and no trans fats. In addition, we recommend high intake of fresh organic vegetables, healthy wild-caught fish and grass-fed beef, healthy fats, fruit and minimal grains.

exercise

The heart is a muscle and needs exercise, just as the other muscles in your body. Optimizing mitochondrial function will help the heart's ability to expand and contract, and optimizing adrenal and thyroid function will raise your energy so that exercise replenishes, rather than depletes you. A balanced exercise plan includes some aerobic workout, especially high-intensity training, weight training and stretching followed by relaxation.

notes

Area for taking notes, consisting of multiple horizontal lines.



thyroid

structure

heart

brain

immune

structure

We've arrived at the last section of the The Holtorf Way. We've covered the primary internal systems of the body that are not visible from the outside, now we look at the structural scaffolding—our musculoskeletal system. Our bones and muscles enable movement, allowing us to work and exercise, as well as rest and restore. Any illness can manifest as pain or discomfort in the musculoskeletal system, which then restricts our movement. On the other hand, a sedentary lifestyle can also weaken the internal body. Attending to our musculoskeletal system is essential for total wellness. Let's examine the issues affecting this system.

Our musculoskeletal (M/S) System includes:

- Muscles
- Bones
- Joints

In this section we will also discuss:

- Skin
- Hair
- Nails

muscles

If you're feeling fatigued, you're probably feeling it in the muscles. Fatigue, weakness and pain could be impacting your motivation to move and exercise. You may also be getting diminishing returns from exercising—you're not getting that rush of endorphins that you used to; you're not building the muscle strength that you used to; your stamina is reduced; or you might even be suffering from "post-exertional fatigue"—that feeling that you've been hit by a truck after exercise, requiring you to drop down and rest for up to several days. These are all clinical signs that something must be corrected in the musculoskeletal system.

reduced strength/stamina

As we all know, muscles need to be continually exercised in order to maintain and build strength. As we age, we lose 3-5% of muscle mass after age 30, then 1-2% per year after age 50. A problem with the elderly is not so much that they can't build muscle, is that they don't actually engage in activity to build muscle. The good news is that strength can improve at any age. In a series of intervention trials in nursing homes (FICSIT trials), 3 days/week of weight training increased muscle mass, speed and strength, and reduced falls in 70-98 year olds. The best intervention is to begin exercising while you are young, and continue it throughout your life span. As discussed in the **Mitochondria** section, mitochondrial function plays a big role here, as the highest numbers of mitochondria are found in the muscles. They make and store the energy needed to contract muscles and must be working optimally in order for the muscles to function.

The primary cause of reduced strength/stamina is, of course, reduced exercise. However, general and/or chronic fatigue due to thyroid and adrenal deficiency, mitochondrial dysfunction, lack of

sleep or chronic infections make exercising difficult or even impossible for some. Thyroid and adrenal hormones must be balanced, insomnia resolved, infections treated and mitochondrial dysfunction must be corrected first in order to engage in a healthy exercise program. There are also other causes of muscle fatigue: hormonal imbalances, nutritional deficiencies, especially reduced Vitamin D, thyroid dysfunction and inadequate protein intake. In healthy middle-aged men and women, the primary cause for muscle weakness is testosterone deficiency. As discussed in the **Hormones** section, testosterone deficiency in men can cause decreased muscle mass, decreased strength/stamina and deteriorating body composition—more fat around the waist. Although less dramatic, these same changes can occur in women and can be corrected with appropriate bioidentical hormone replacement.

*Note: See **Heart** section for a discussion of statin drugs. Their main side effect, because they deplete the body of CoQ10 can include: muscle degeneration, muscle weakness, muscle pain, diabetes and heart failure.

pain/fibromyalgia (fm)/chronic fatigue syndrome (cfs)

One of the hallmark signs of fibromyalgia and chronic fatigue syndrome is pain. CFS's salient feature is fatigue, however muscle pain, joint pain and post-exertional fatigue are part of the diagnosis. FM and CFS are syndromes, but do not diagnose the root causes of the symptoms. Neither of these diagnoses name the cause of the pain, and often a patient's pain is either dismissed or just tossed into this diagnosis without any search for the root cause or the remedy. We believe that the cause of these syndromes is multifactorial, and when assessed and treated appropriately, the pain can be diminished and often eliminated.

The other sections of The Holtorf Way address the possible causes: thyroid, adrenal, mitochondrial dysfunction and hormone imbalances. Often when these systems are corrected, the pain disappears. In more severe cases as mentioned in the **Immune** section, chronic viruses, yeast, bacteria-including Lyme and co-infections may be the cause. While pain prescriptions simply mask the pain without addressing the cause, they may be prescribed initially to help stop the cycle of pain, while the causes are being addressed.

bones

The health of our bones depends on healthy, strong muscles to maintain balance, create stability and allow youthful, pain-free movement. Although our bones seem to be a static structure, they are actually composed of living tissue that is constantly restructuring. Maximal mineralization is needed to create the right balance of strength and flexibility in the bones.

osteopenia/osteoporosis

Bones need the correct signaling from the endocrine system to keep regenerating. The signaling involves the parathyroid gland, the thyroid gland and levels of calcium in the blood, which then creates a constant interplay between the cells which build new bone (osteoblasts) and cells which break down bone (osteoclasts) to keep the bone tissue alive and healthy. Bone density is important for maintaining balance and preventing fractures. As bone density decreases, risk of fracture follows. To underscore the importance of bone health: it is estimated that 50% of elderly women who fall and break a hip will never walk again and 50% of elderly men who fall

and break a hip will die within a year. Bone density is best measured with a Dual Energy X-Ray Absorptiometry (DEXA Scan), which gives a picture of the current state of the bones.

The diagnosis of Osteopenia is declared when bone density decreases to an intermediate level below normal, and to a more severe level in Osteoporosis, both are determinants of fracture risk. Vitamin and mineral deficiencies must be corrected for healthy bones, especially vitamin D, vitamin K, calcium, magnesium, strontium, and boron. Also, excess acidity formed by excessive protein intake without balancing with vegetables, and carbonated sodas are two other causes of bone breakdown. Exercise can also increase and maintain bone density. Finally and most importantly, hormones are also integral to maintaining bone.

Osteoporosis is prevalent in menopausal women due to the decline in estrogen. Estrogen maintains bone, while progesterone helps build bone and testosterone strengthens bone.

Optimizing hormones in both men and women is necessary to prevent osteoporosis, fractures and early death from falls. We find that with healthy prevention and treatment, bone mineral density can improve and the use of the dangerous osteoporosis medications (bisphosphonates) can and should be avoided.

joints

The joints are the spaces between the bones where ligaments, tendons, cartilage and synovial fluid create the possibility of movement. Whether due to overuse, underuse, inflammation, infection or autoimmune disorders, joint pain can be debilitating for many. Generalized joint pain can also occur from hypothyroidism and hormone deficiencies. We have come to expect joint pain as a part of aging, however restoring hormones can often resolve joint achiness and pain.

arthritis

Arthritis is a condition of inflammation in the joints. Here we have another diagnosis with hundreds of causes. Arthritis can be categorized into inflammatory, non-inflammatory, infectious and autoimmune.

Osteoarthritis, also known as degenerative arthritis, can be treated with growth factors, cytokines and stem cell activators. These can be stimulated with treatment modalities such as PEMF, Biomodulation or PRP, which can reverse the degeneration and heal the joints. Typically, anti-inflammatory prescriptions and NSAIDS will be prescribed, which can cause harm to the gut and cardiovascular system. An anti-inflammatory diet with added supplements is a more thorough approach to reduce the pain and inflammation.

Rheumatoid Arthritis is an autoimmune, inflammatory process causing swelling, redness, heat and pain in the joints. There are specific genetic predispositions to this autoimmune disorder, but studies show that over 90% of autoimmune diseases are associated with a chronic infection. The infection has surface proteins that resemble human proteins so as the body attacks the infections the antibodies cross react to one's own tissue. Eradication of the infection with LDA, LDI and prescriptions can eliminate the autoimmunity. However, as with all autoimmune diseases, healing the gut, engaging in immune-modulating therapies, embarking on a strict anti-inflammatory diet and eliminating food sensitivities can be more helpful than the conventional drugs used to suppress the symptoms.

Lyme Arthritis is known to present itself as joint pain in Lyme patients. The controversy over the existence of a chronic form of Lyme disease was discussed in the **Immune** section. It may be degenerative in one or more joints, or often we see “migratory” joint pain, that is, pain that comes and goes and moves from joint to joint in a random manner. Treating the underlying infections is necessary to address this painful symptom.

skin

The skin is actually the body’s largest organ, with active layers of continual cell growth and shedding. It serves as a protective barrier to the outside environment, with its own layer of bacteria and immune cells, similar to that which lines your gut. Through sweating, the skin also serves as an organ of detoxification. Skin conditions often reflect a deeper disorder occurring inside the body. If you have any unusual skin disorders, please mention these to your doctor, because they might be signs of something more serious internally.

rashes/eczema/psoriasis

Skin rashes such as eczema or psoriasis are manifestations of internal processes in the body gone awry. Often topical steroid creams are prescribed which reduce the redness, swelling, itching or pain, but they merely suppress the symptom without addressing the cause, and they may cause thinning of the tissue over time. Toxins in the form of food allergies, heavy metals, environmental toxins, sugar, or processed food chemicals can all cause these reactions in the skin. Once the trigger is identified through heavy metal testing, a food allergy panel or an elimination diet, it can be eliminated to heal the skin condition permanently.

Certain rashes, such as the bulls-eye rash of a tick bite, or streaking red lines from Bartonella can be indications of Lyme disease and will best be treated with a comprehensive immune protocol and possible antibiotics. Other skin conditions can be caused by chemicals found in personal skin care products, perfumes and shampoos. Remember that if we can absorb medications topically—as we do with topical bioidentical hormone creams and gels—then we can also absorb toxic chemicals through our skin care products. Begin reading labels carefully and start substituting all household and personal care products with non-toxic, organic natural ingredients.

candida

We discussed the condition of overgrowth of Candida inside the digestive tract, causing gas, bloating and constipation, as well as the systemic overgrowth of candida throughout the body, causing joint and muscle pain, fatigue, and brain fog. When candida overgrowth occurs on the skin or toenails, it is usually a sign of internal overgrowth as well. Topical antifungal medications can be helpful but not usually curative. The comprehensive antifungal protocol mentioned in the Gut section is recommended to reduce the fungal overgrowth and restore the healthy bacteria throughout the body.

acne

While acne is typically seen as a hormonal imbalance in puberty, it may appear again later in midlife when the hormone levels are declining. Excess testosterone in relation to declining levels of estrogen and progesterone is the most typical cause of acne in perimenopausal women. Restoring the right balance of bioidentical hormones can reduce the breakouts.

Another overlooked cause of acne is food allergies. The most common food allergies in this case tend to be gluten, wheat, dairy or eggs, while sugar is another typical offender. If any of these are identified in the food allergy panel (see **Gut**), removal of the food triggers will often clear the skin.

aging

Dry, aging skin results from low thyroid, adrenals and female and male hormones. These hormones are integral to healthy skin. If hormone levels are restored early enough, skin can maintain its supple, moist, youthful glow. In addition to using bioidentical hormones internally, we can prescribe face creams that contain hormones to help keep the skin healthy. Sugar, toxic foods, alcohol, smoking and lack of exercise will all accelerate the aging of the skin.

hair loss

Hair loss can have many causes, such as: hormonal, thyroid, infections, and toxins. Society is more accepting of male pattern baldness, which also has a strong genetic component. However hair loss in women can be devastating, and is one of the classic signs of hypothyroidism. The cause may also be an imbalance of testosterone, dihydrotestosterone and estradiol. A full blood panel will reveal the imbalance, which can be adjusted with bioidentical hormones, medications and supplements. Oxygen cream and thymus can be beneficial for male and female hair growth.

Other possible causes include stress, infections, vitamin and mineral deficiencies, protein deficiency, food allergies and toxins. Any of these deficiencies can also cause dry and brittle hair that easily breaks. When all of these factors are addressed, hair loss may be avoided if treatment begins at the first signs of hair breakage and shedding.

nails

The fingernails and toenails can reflect hormone deficiencies, thyroid deficiency, vitamin and mineral deficiency, trauma, toxins and infections. If the condition of your nails has changed recently, it may reflect one of these imbalances in the body. We will examine your nails in your exam and add it to the complete clinical picture of your health status. As your health improves with treatment, it will reflect in your nails as well.

medications

Usually medications are best avoided in most of the conditions mentioned in this section, because the majority of them simply suppress the symptom rather than address the cause. However, we may prescribe medications initially, while we search for the cause of your condition and treat other imbalances and deficiencies in your body.

HoltraCeuticals™: pharmaceutical-grade, doctor-formulated

The supplements here are designed to restore vitamin and mineral deficiencies, optimize mitochondrial function and reduce inflammation for healthy bones, muscles, joints, and skin:

- Antiox Max
- Big Hair
- Bone Restore
- COQ10 Plus

- Daily Energy Elements
- Joint Pain Rx
- Magnesium Citrate
- Mito Immune
- Multiplex
- Optimal D
- Oxygen Cream
- Pyrro Cell
- Revitaglow
- Ribomax
- Topical Thymus Peptides
- Ultra Omega
- Vitamin D
- Vitamin D/K

diet

Sugar and sodas must be eliminated for a healthy musculoskeletal system. Sodas are acidic and force calcium to be extracted from the bone to neutralize the blood, and can contribute to osteoporosis. Sugar and simple carbohydrates also cause inflammation, which in itself can cause musculoskeletal pain. Organic green leafy and brightly colored vegetables will provide the full range of vitamins and minerals for healthy mitochondrial function for the muscles, remineralization for the bones, hair and nails, and inflammation reduction for glowing skin.

exercise

Exercise is essential for maintaining muscle strength and bone density. To prevent osteoporosis, weight-bearing exercise such as walking, running, yoga, and weight training are recommended. However, if you are suffering from CFS, FM or Lyme disease, your exercise program should be modified until you restore your sleep, reduce your pain and gain some energy. Daily gentle stretching and walking would be good first steps. Sweating is also essential for detoxification. If you're not strong enough to exercise, Epsom salt baths in filtered water or far-infrared saunas can help speed the detoxification process and reflect in healthier skin.

SOUTHERN CALIFORNIA
(310) 375-2705
2232 E. Maple Ave.
El Segundo, CA 90245
M-F 8:30 AM to 5:30 PM

GEORGIA
(678) 494-7800
3750 Palladian Village Drive
Suite 300
Marietta, GA 30066
M-Th 8:30 AM to 5:00 PM

NORTHERN CALIFORNIA
(650) 638-1141
1065 East Hillsdale Blvd.
Suite 108
Foster City, CA 94404
M-Th 8:30 AM to 5:30 PM

PENNSYLVANIA
(610) 265-0500
491 Allendale Rd.
Suite 222
King of Prussia, PA 19406
M-Th 8:30 AM to 5:30 PM

