Special Report:

Functional & Integrative Medicine

Going Beyond Traditional Treatment

by Kurt N. Woeller, D.O. & Tracy Tranchitella, N.D.

Health Care Is In Crisis

The high cost of medicines, procedures and insurance premiums are forcing people to seek alternatives for their medical problems. Also, the realization that conventional medicine *(aka., traditional medicine)* is limited in helping many people with many chronic ailments has instigated a movement in self-care via internet resources and *do-it-yourself* treatments. Individuals are seeking out practitioners trained in “other” ways of administering health care. These “other” ways are commonly referred to as integrative medicine, functional medicine, or complementary medicine.

However, these various descriptions of health care can create confusion for average individual looking for improvements in their health.

For the sake of simplicity, we'll stick with functional and integrative medicine as descriptors for the "other" ways of implementing health care.

Let's first define integrative medicine.

What Is Integrative Medicine?

Integrative medicine is the expanded implementation of health treatments including dietary intervention, nutritional supplements, natural medicine and diagnostic testing for a more comprehensive approach to health care.

Integrative medicine practitioners understand, appreciate and utilize a variety of therapies beyond just conventional medications, although these can be used if needed. Therefore, integrative medicine is often seen as complementary to conventional medicine. However, integrative medicine is a more holistic approach to health care well suited to meet the challenges of chronic health problems.

Integrative medicine utilized by health practitioners often incorporates other aspects of complementary medicine, including biomedical intervention and functional diagnostic medicine *(aka., functional medicine)*.

What Is Functional Medicine?

Functional medicine is an approach to health care that looks to determine the underlying root cause of illness. This approach comes from understanding that all body systems are integrated, but most important is the functional relationship of the digestive, hormone and immune systems.

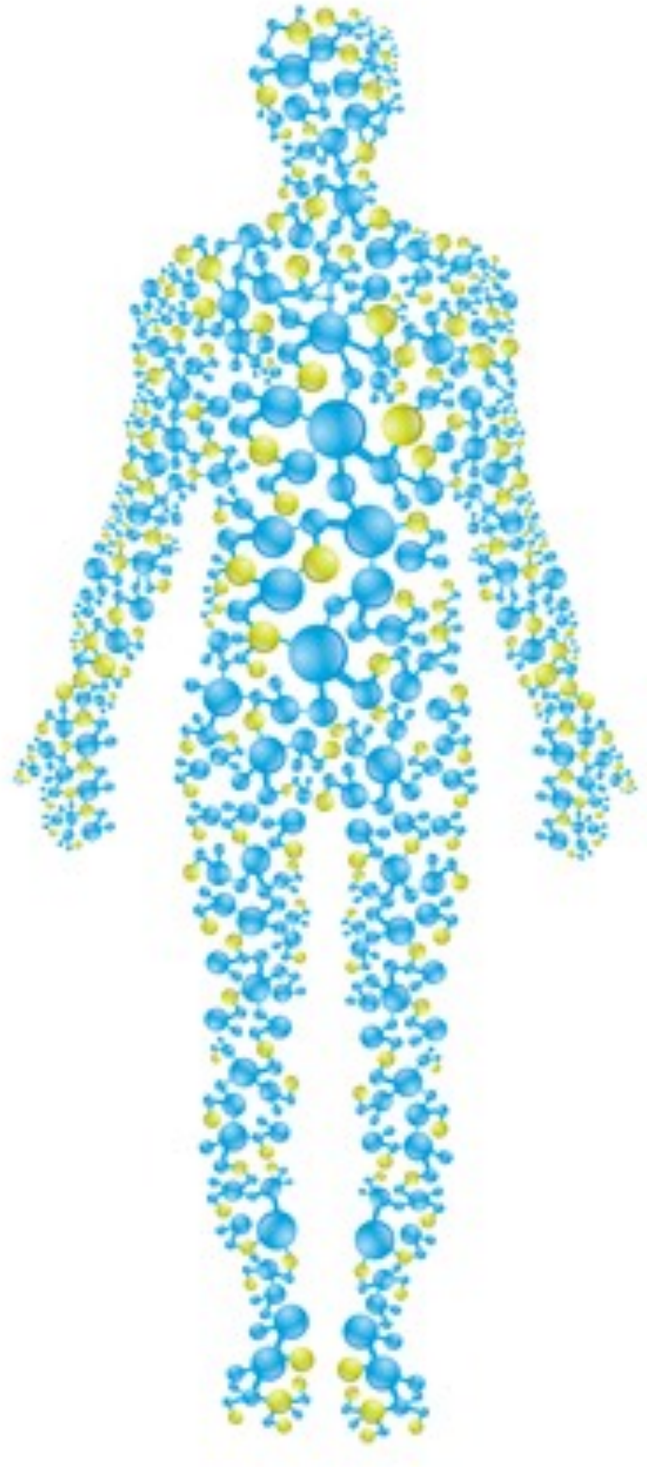
The digestive system is central to functional medicine because of its role in nutrient absorption and toxin elimination. The gut is the physical window to the body uniquely designed to allow necessary nutrients access to the bloodstream, but block entry of harmful substances.

Unfortunately, this does not always occur, and a person's health can be greatly compromised by toxic food, infections or internally generated toxins in the gut that leads to inflammation and oxidative stress throughout the body. A food example of this scenario is gluten intolerance, which generates inflammatory processes in the digestive system manifesting as bloating, gas, and stool problems *(constipation and/or diarrhea),* but also more systemic issues such as fatigue, headaches and joint aches and pains. In severe cases, the autoimmune condition Celiac Disease has been linked to cerebellar atrophy, leading to neurological problems of balance and spatial perception and other degenerative disorders [1].

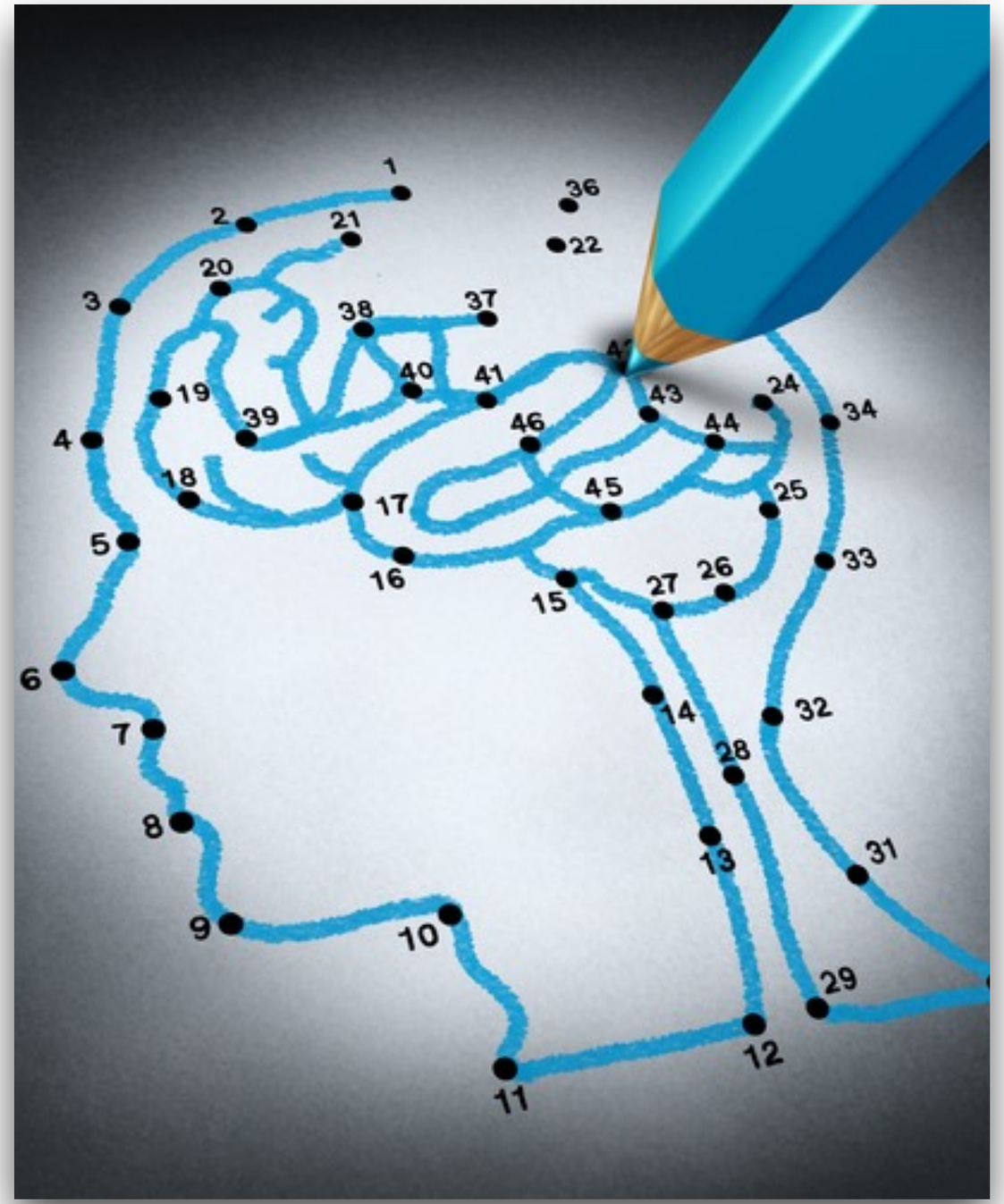
A protein fraction of gluten called gliadin has also been associated with causing psychological changes in individuals with autism as well [2]. The gluten peptide called gliadomorphin has been linked to brain chemical changes affecting attention, speech and behavior.

The digestive system is also the focal point of immunity that influences the rest of immune function throughout the body. This immune system, called mucosal immunity, is the first line of defense against pathogens entering the body through the digestive system and is uniquely set-up to neutralize these pathogens and influence appropriate immune shifts to keep things functioning appropriately. A breakdown in mucosal immune function leads to pathogen overgrowth and increased antigen absorption from the gut which can trigger systemic inflammation and oxidative stress - *all of which is a trigger for autoimmune reactivity and chronic ill-health*.

These factors, and more, then influence the hormone system, most directly adrenal function. The adrenal glands, through interactions from the hypothalamus-pituitary-adrenal (HPA) axis, can influence everything from digestive, immune, metabolic, detoxification and a multitude of biochemical reactions that regulate protein production, cellular assimilation and neurological function. The interrelationship between digestive, immune and adrenal function is critical with regards to understanding and implementing assessment tools and therapy based on the tenets of functional medicine.



What Is Biomedical Medicine?

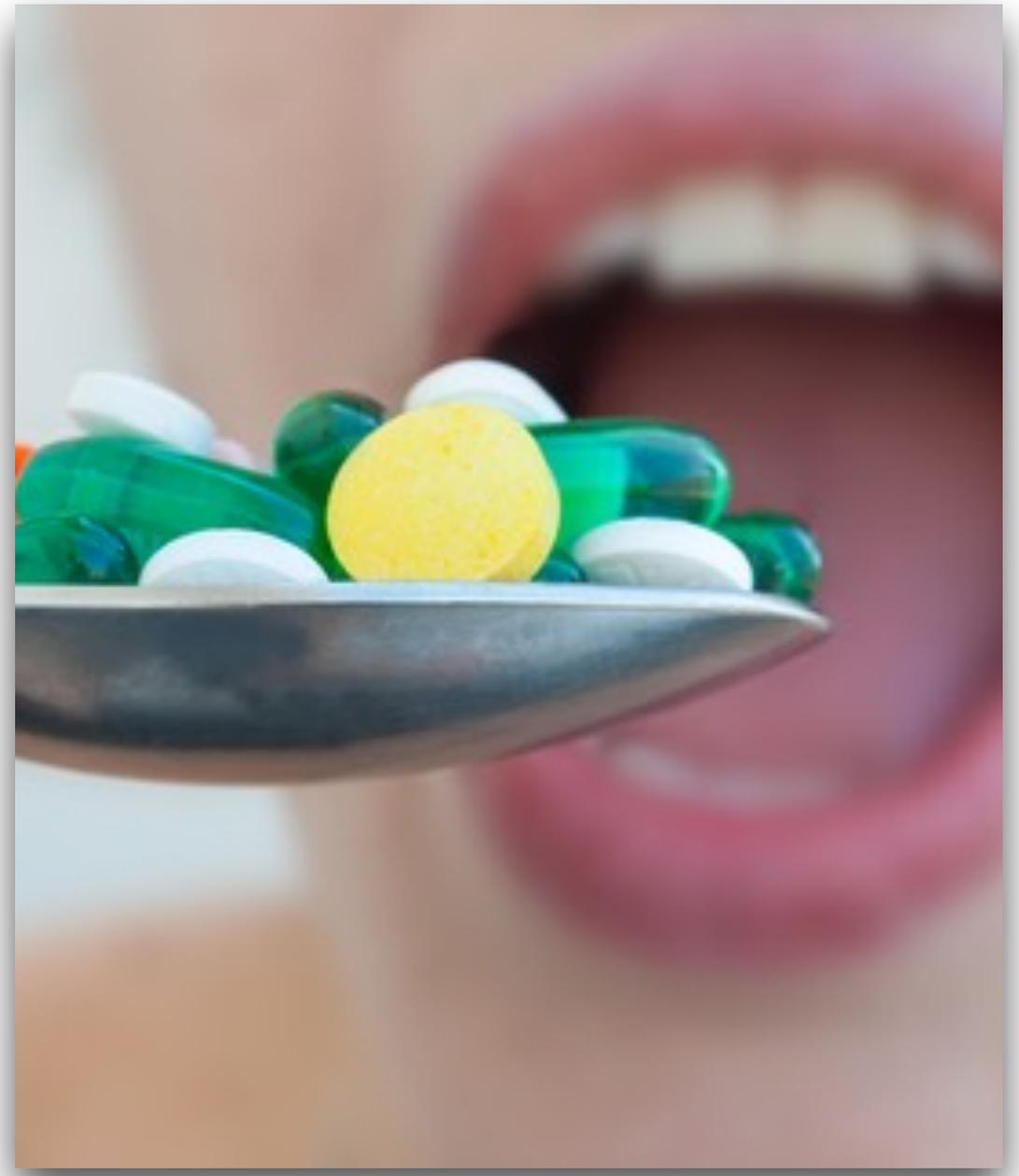


Biomedical medicine is similar to functional medicine, which primarily focuses on the integration of digestive, immune and hormone balance, in that it too seeks to understand the root cause of illness. However, in the classic definition of functional medicine which appreciates the interrelationship between the digestive, immune and adrenal systems which then impacts oxidative stress and detoxification, biomedical medicine integrates additional information such as hereditary factors, environmental toxicity and unique biochemical imbalances such as methylation defects, metabolic enzyme problems and neurochemistry dysfunction.

Biomedical medicine is well-suited towards helping the autism-spectrum and mental health communities, but is applicable to any patient population and merges well with the basics of functional medicine. Both functional and biomedical medicine go hand-in-hand to deepen a practitioner's knowledge of multi-system problems and provide integrative health options to intervene on the patient's behalf.

Integrative Medicine Statistics

Who Is Seeking Alternatives to Conventional Medicine?



In early 2000's, the National Institute of Health (NIH) implemented a survey to better understand the general public's desire for health care beyond conventional medicine. The statistics were impressive:

- *Approximately 40 billion dollars was spent out of pocket, compared to 13 billion dollars a decade earlier in 1990.*
- *Approximately 23 billion dollars a year is spent on supplements.*
- *These numbers continue to increase with more people seeking alternatives for their health care.*

As summarized in this survey report, "patients are clearly seeking additional solutions for their health." [3].

In a follow-up analysis in the late 2000's, the Centers for Disease Control and Prevention's *(CDC)* National Center for Health Statistics (NCHS) revealed:

- *Approximately 38% of U.S. adults aged 18 years and over and approximately 12 percent of children used some form of complementary health approach.*
- *U.S. adults spent approximately 34 billion out-of-pocket on visits to complementary health practitioners and purchases of complementary health products, classes, and materials*

Again, more evidence that the public at large is seeking alternatives to their health care and are often willing to pay out-of-pocket for it.

What Is The Interest Regarding Integrative Medicine Amongst Doctors?

The Arizona Center for Integrative Medicine Fellowship Program, which began in 1997, typically graduated 2 people per year. However, in recent years, graduation rates have gone up significantly—to nearly 1,000 physicians *(and counting),* nurse practitioners and physician assistants.

Another organization called the *Institute of Functional Medicine* continues to expand their influence with growing attendance at their medicine conferences and other groups such as *Integrative Medicine for Mental Health (IMMH)* report similar growth as well.

Medical schools are also responding the increase demand of the public for more alternatives to conventional medicine. Over 30 institutions around the country have adopted the curriculum from the Arizona Center for Integrative Medicine.

The Institute of Functional Medicine reports that faculty from one-fifth of medical schools in the United States have attended their training courses and *The Consortium of Academic Health Center for Integrative Medicine* has over 55 academic medical centers in their membership.

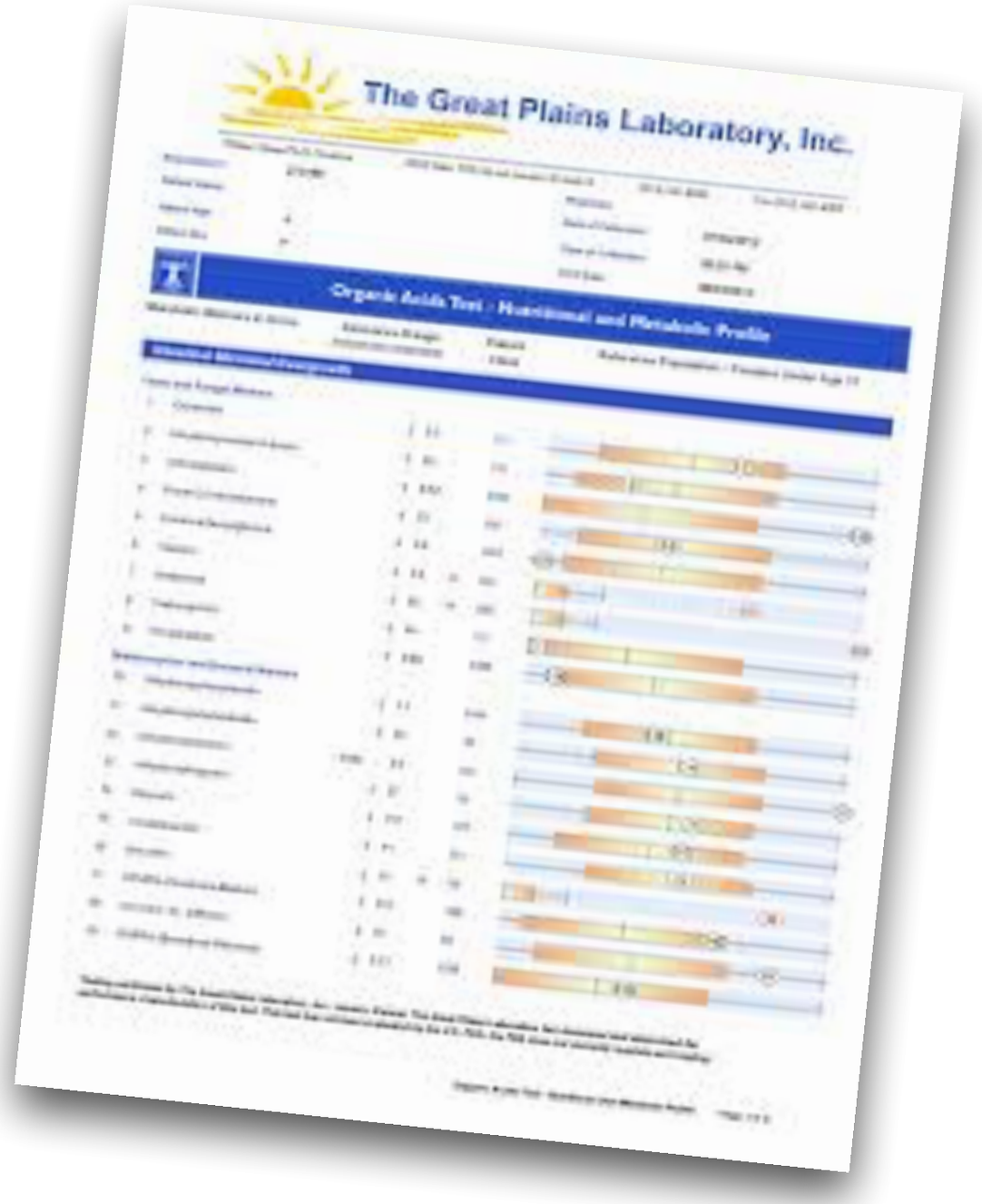
Finally, hospitals too are responding to the demand. A report in 2011 from the American Hospital Association found that over 40% of hospitals surveyed offer one or more Complementary and Alternative Medicine (CAM) services in addition to their conventional services.

Functional/Integrative Medicine Examples Seen in Clinical Practice

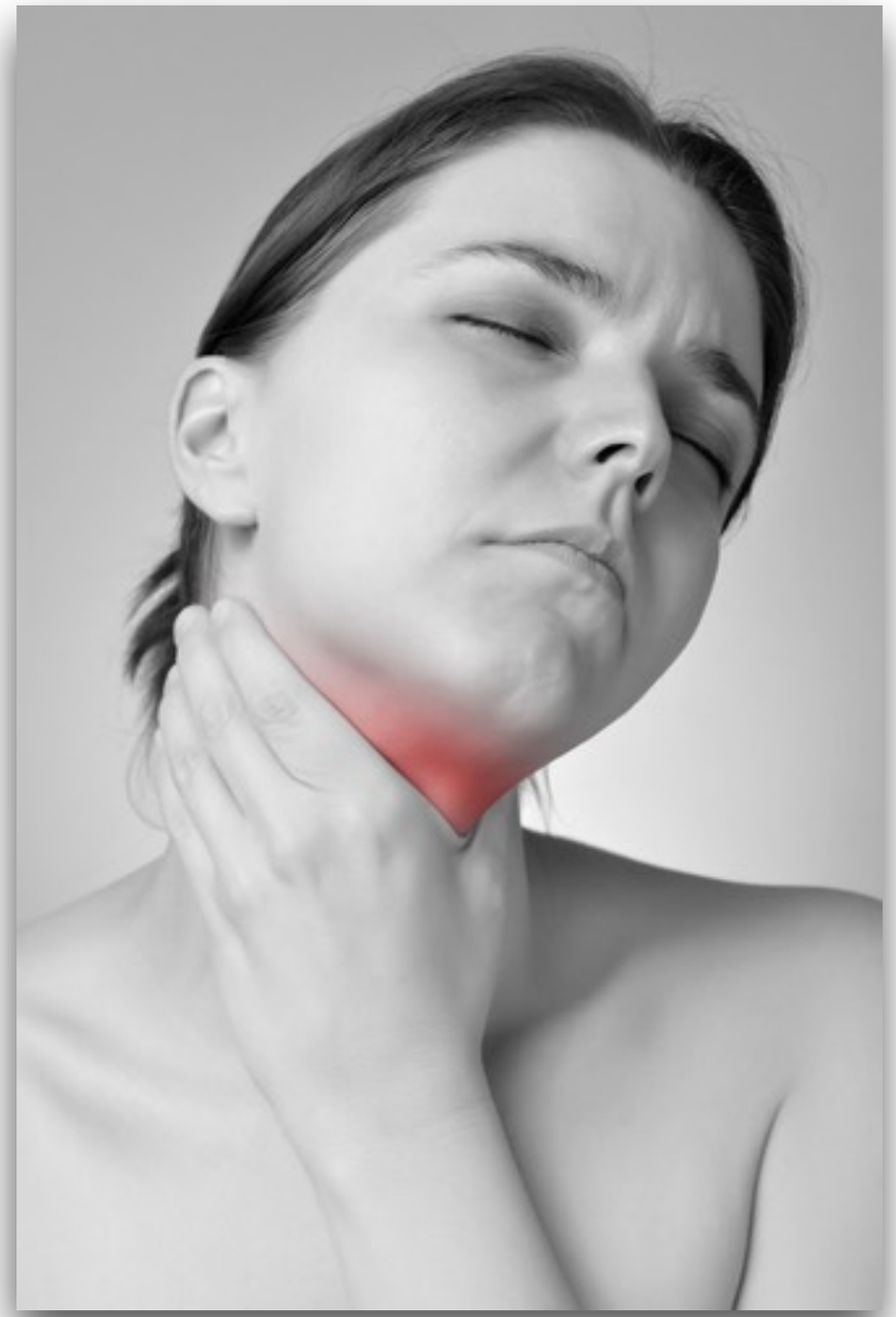
Listed below are two examples of functional/ integrative medicine approaches from our collective practices.

The first example relates to the occurrence of low thyroid function, why it's important to evaluate an individual's symptoms beyond just basic conventional medicine testing and incorporate assessment for adrenal function *(aka., HPA function)* for better clinical outcomes.

The second example is a case presentation regarding oxalic acid toxicity and the importance of assessing this toxic chemical through Organic Acids Testing.



Example #1 – Could Your Patient/Client Be Hypothyroid?



There are over 20 million people who take thyroid medication. Research indicates that approximately 4.6% of the U.S. population over the age of 12 years suffers from low thyroid function [4]. Why are so many left undiagnosed? One reason may be inadequate testing for thyroid hormone levels and the sole reliance by medical practitioners on these lab results for a diagnosis despite the patient's symptoms. Many practitioners will only look at the TSH *(thyroid stimulating hormone)* and not the level of the individual thyroid hormones. The reference range for the TSH can be too broad leaving many people with low thyroid symptoms undiagnosed and, therefore, untreated.

Symptoms of Hypothyroid

Symptoms of low thyroid include fatigue and weakness, weight gain, intolerance to cold, dry skin, brittle nails, irregular menses, PMS, infertility and miscarriage, elevated cholesterol, depression and anxiety, decreased libido, headaches, dizziness, poor memory and difficulty concentrating, constipation, hair loss, joint pain and muscle stiffness.

We have seen patients who present with a combination of these symptoms and have not been diagnosed with low thyroid function because their TSH falls within the normal range. Information from the *Journal of the American Academy of Endocrinology* revealed that the range for TSH is likely too broad. Numbers from individuals approaching the upper range of normal *(4.25-5.0)* may in fact be developing hypothyroid. Our experience is that numbers above 2.0 may indicate a potential under activity of the thyroid.

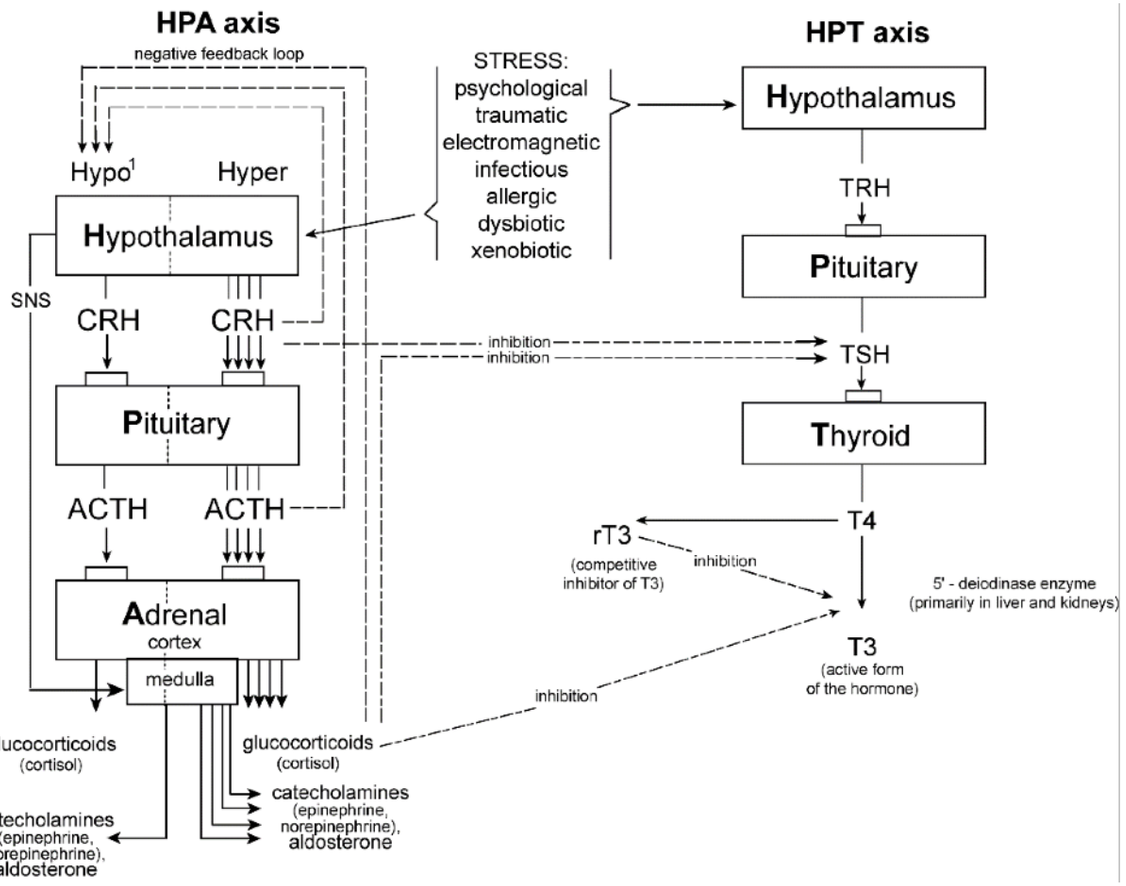
How The Thyroid Works

The thyroid receives information from the pituitary gland in the form of TSH. This hormone stimulates the thyroid to produce the hormones T4 *(thyroxine)* and T3 *(triiodothyronine).* T4, which is relatively inert and T3, the more biologically active hormones are made by the body in a ratio of 90:10. This ratio provides a steady pool of T4 for conversion to T3 at the cellular level as needed by the body. Once T3 enters the cells it activates enzyme pathways that increase energy production, protein synthesis, fat and carbohydrate breakdown, increased tissue oxygenation and mineral utilization.

Thyroid hormone activates over 100 enzymes to mediate a host of normal bodily functions. In fact, the brain, heart, lungs, intestines, sex glands and muscles owe much of their function to adequate thyroid hormone levels.

When it comes to blood tests, a more thorough assessment of thyroid function would include a Highly Sensitive TSH, Total T4, Free T4 and Free T3. In our experience it is important to look at the free fraction of the hormone because of its metabolic activity while those that are bound as in the total measurement are inactive. If the TSH is high, thyroid function is low. If the free fraction of the hormones is low, thyroid function is low. If all of these values fall within a marginally normal range, but a patient is still symptomatic, another way of assessing thyroid function is by doing basal body temperatures. This involves taking an axillary *(armpit)* temperature before getting out of bed in the morning for 5-7 days. If the average temperature is below 97.6 then the person may be low thyroid.

The HPA/Thyroid Connection



The symptoms of low thyroid are very similar to those of low adrenal function and the two glands must be adequately assessed because one can affect the other. The adrenal glands are positioned above the kidney and supply our bodies with the ability to deal with stress by releasing cortisol. Cortisol helps to maintain adequate blood sugar levels, mobilizes fat stores, produce an anti-inflammatory effect on body tissues, effects blood pressure, reproductive function, electrolyte balance, sex hormone production, mood and energy level.

If an individual is in a constant state of stress, the adrenals may put out an elevated amount of cortisol. The effect on the thyroid is to slow it down. This occurs by cortisol's ability to alter T3 to T4 conversion, as well as block the effects of TSH on the thyroid gland *(see diagram at left).*

HPA Testing

The adrenals, aka., HPA axis can be tested by taking 4 salivary samples throughout the course of a single day at designated times. Cortisol has a diurnal rhythm and is highest in the morning and lowest at night. The adrenals also produce DHEA *(dehydroepiandrosterone),* which is a precursor to testosterone and estrogen. When the adrenals are fatigued, the balance between cortisol and DHEA is altered. This can lead to an imbalance in sex hormone production as well.

Treatment of Low Thyroid and HPA Dysfunction

The typical treatment for low thyroid is a prescription for thyroid medication. There are various types available, both synthetic and natural. Each person's physiology is different and, therefore, one's response may vary on different medications. A formulation that contains both T4 and T3 seems to work the best especially if it is delivered in the ratio that the body naturally produces. If one has adrenal fatigue, a balanced, nutrient-rich diet, hormone precursors, herbs, stress response modification and rest *(all part of a comprehensive integrative medicine program)* will often remedy the situation. In treating both, an appropriate supplement program to aid the function of both glands is essential.

Treatment of Low Thyroid and HPA Disfunction

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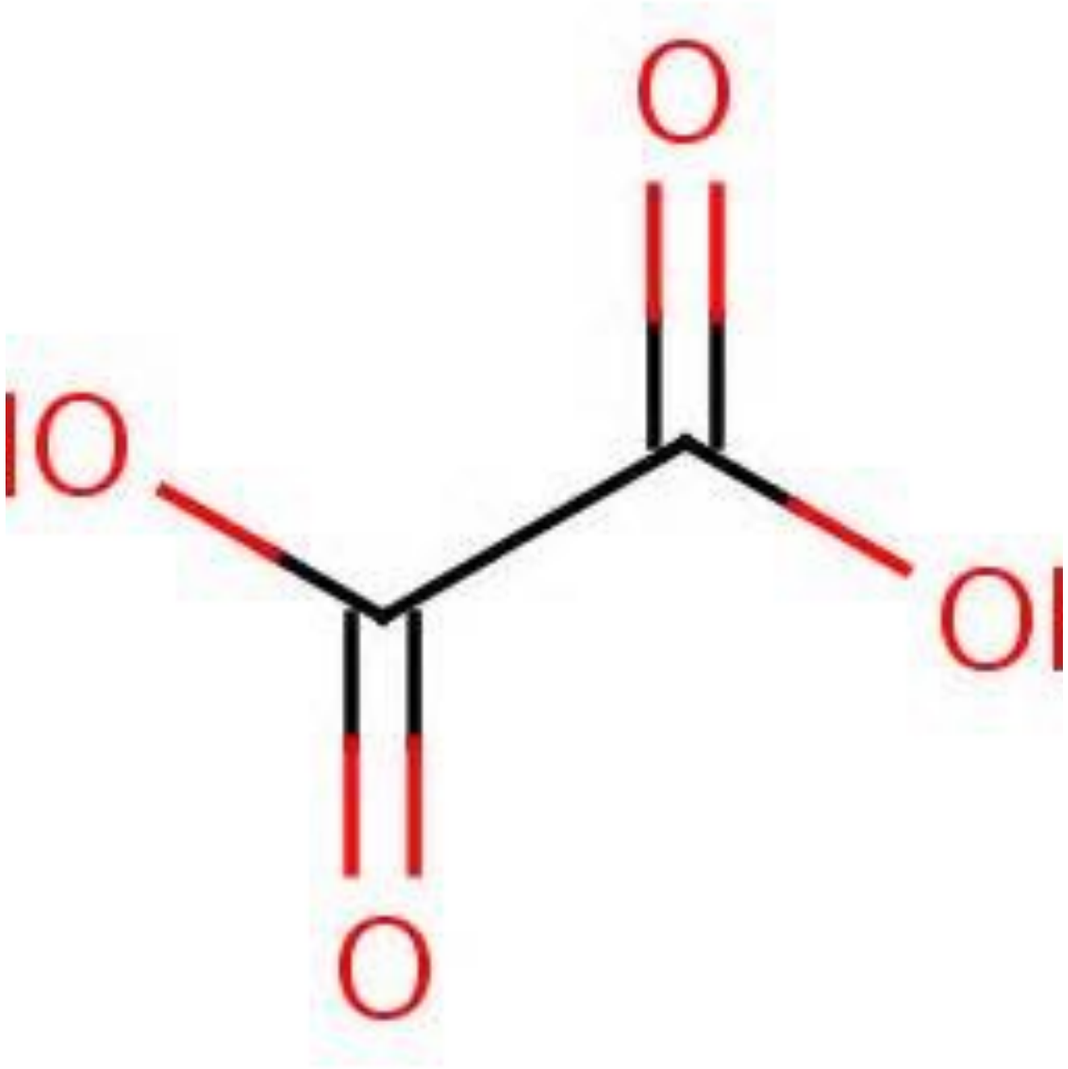
Example #2: High Oxalic Acid Along with Body & Bladder Pain

Chemical Structure of Oxalic Acid



Oxalic acid is the most acidic acid in body fluids. In large amounts it can lead to oxalate crystal formation in the kidneys. However, oxalate crystals can also accumulate elsewhere, e.g. thyroid.

Oxalic acid detection, through comprehensive Organic Acids Testing, has a lot of clinical usefulness in any functional/integrative medicine practice. People often present with a myriad of seemingly unrelated symptoms. This is a case of an individual who presented with significant body aches, tendon pain, and bladder discomfort.

A 43-year old female presented to our practice with a history of the following:

- Pressure headaches
- Fatigue, brain fog
- Body aches and tendon pain.
- Cyclical urinary pain (sharp)
- Digestive discomfort (bloating, painful bowel movements)

The majority of these complaints had been going on for many years. She had been tested on many occasions for bladder infection all coming back normal.

Past medical history was significant for Blastocystis hominis and Cryptosporidium parvum infection (treated successfully), Raynaud's phenomenon (reduced blood flow in response to cold or emotional stress causing discoloration of fingers and toes), and irritable bowel syndrome. She took periodic Ibuprofen and Atarax (for suspected interstitial cystitis).

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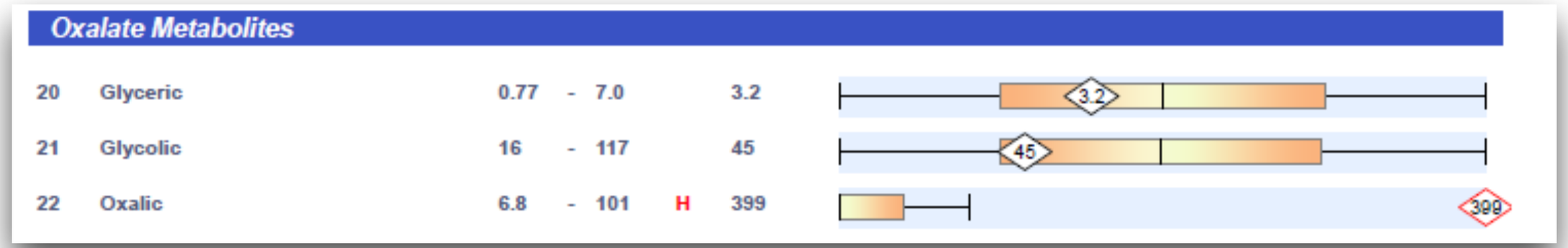
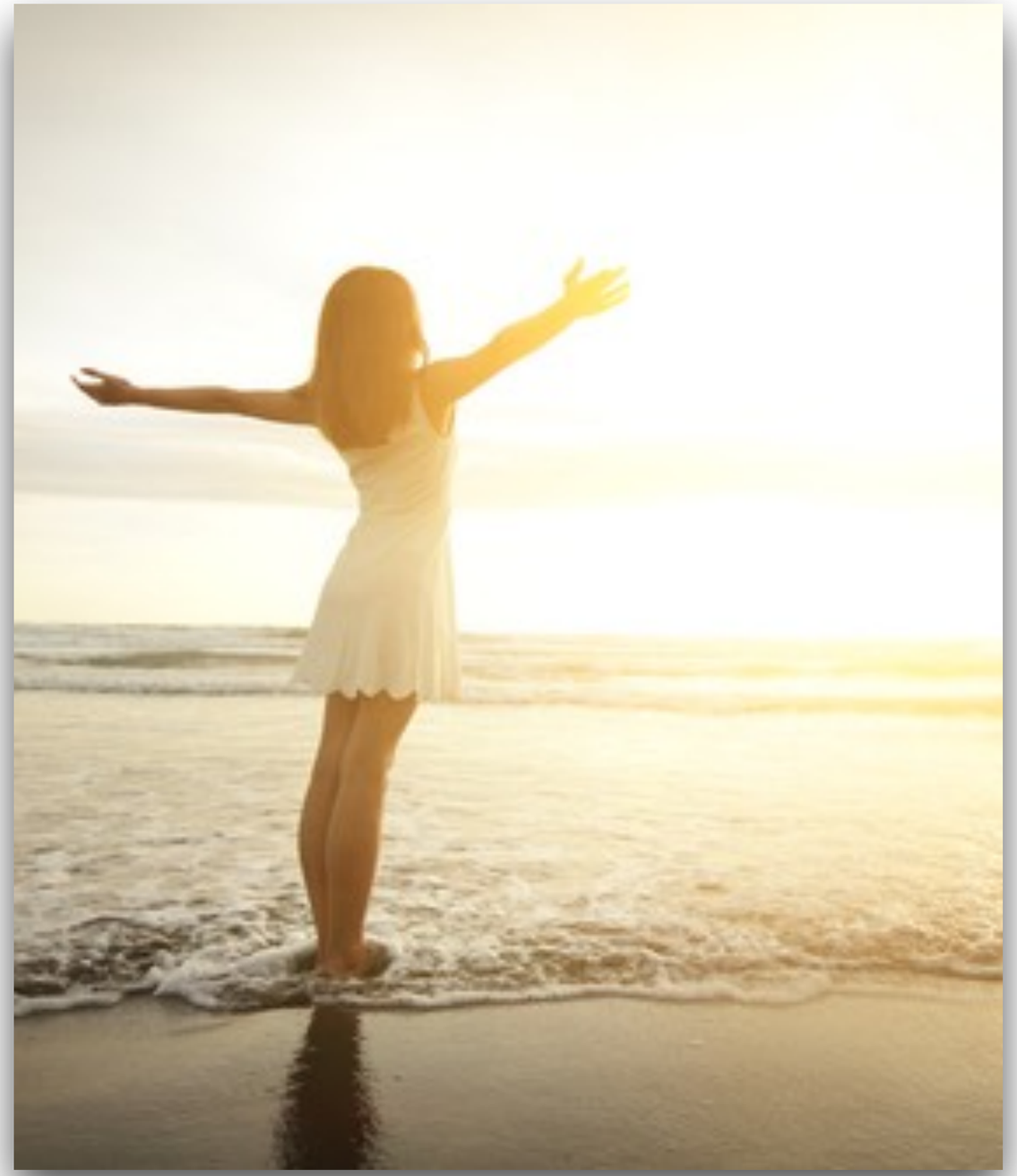
One interesting fact obtained on clinical history was her "extreme muscle pain" when she ate nuts and vegetables. No other doctor had given much thought to this statement. Oxalic acid in high amounts is often found in nuts such as almonds and certain vegetables such as beets and spinach.

Our suspicion based on the following complaints was an elevated oxalic acid which was confirmed by testing (see image below) to show oxalic acids over 350 *(which is significantly high).*



Patient was given following instructions:

1. Avoid all soy, nuts (including butters), berries (including jam and juice), and spinach. Also, she was to self-evaluate her own diet for other high oxalate foods.
2. Put on approximately 250mg of calcium citrate and 100mg of magnesium citrate with each meal – breakfast, lunch, and dinner. The citrated form of these minerals helps to bind oxalates in the digestive system and prevents them from being absorbed.
3. High dose of lactic acid probiotic upwards of 225 billion organisms per dose. This helps to degrade oxalates in the digestive tract.
4. L-Arginine at 1000mg daily. Clinical benefit of L-Arginine in high oxalate problems is to decrease tissue pain, particularly bladder discomfort.
5. Epsom Salt Bath at least 4 times weekly, 1 to 2 cups as tolerated in bathwater. Epsom salt helps to soothe the skin and aids in the bodies processing of oxalates.



This individual's response was impressive. Over the next 3 months she reported complete elimination of bladder/urinary pain, and approximately an 80% improvement in muscle and tendon discomfort. Bowels become more regular and non-painful and fatigue had improved by about 50%. In addition, patient no longer experienced Raynaud's phenomenon when exposed to cold temperatures.

The test performed on this individual to evaluate for oxalic acid and other metabolic markers was the Organic Acids Test from Great Plains Laboratory. This is a urine test that evaluates numerous markers useful for toxicity, certain vitamin levels, bacteria and yeast toxins and much more.

Final Comments

Integrative health approaches can be utilized by a wide variety of practitioners from medical doctors, osteopaths, naturopaths and chiropractors to other health professionals such as clinical nutritionists and health coaches. The types of health disorders often helped with integrative medicine is extensive and includes a range of conditions from allergies, arthritis and autism to neurological and autoimmune disorders, chronic fatigue syndrome and more.

The main ingredient for success in integrative medicine for any practitioner is the desire to learn and implement different ways of treatment for their patients and clients.

Tracy Tranchitella, N.D.

Tracy Tranchitella, N.D. is a Doctor of Naturopathic Medicine & an integrative medicine physician specializing in small intestine bacterial overgrowth *(SIBO)* & other chronic digestive disorders. She is also a specialist in naturopathic consultations for general health issues such as autoimmune and cardiovascular disease, chronic fatigue, bio-identical hormone replacement therapy *(BHRT),* thyroid & adrenal dysfunction and women's health.

Dr. Tranchitella is a clinical advisor for ZRT Laboratory and previously for BioHealth Labs, providing health professionals laboratory interpretation & clinical troubleshooting consultations on various integrative medicine lab tests.

She is an author, educator & co-founder of Integrative Medicine Academy, an online resource for health professionals seeking educational information regarding integrative medicine.

Dr. Tracy Tranchitella can be reached for private consultations through her private practice, Sunrise Functional Medicine or via email at SCMedicalCenter@gmail.com

Kurt N. Woeller, D.O., is a Doctor of Osteopathic Medicine, integrative medicine physician & biomedical autism treatment specialist. He is the author of several integrative health books:

- *Autism – The Road To Recovery*
- *Methyl-B12 For Autism*
- *7 Facts You Need To Know About Autism*
- *Methyl-B12 & Methylation Therapy for Alzheimer's Disease & Dementia*
- *5 Things You MUST Do To Treat Your Rheumatoid Arthritis* (co-authored with Dr. Tranchitella)

Kurt N. Woeller, D.O.

Dr. Woeller is an international lecturer & educator & provides health practitioner education through Integrative Medicine Academy, an online resource for educational information on integrative medicine topics. He also runs Autism Recovery System, an online resource for parents of autism-spectrum individuals.

His private practice, Sunrise Functional Medicine, focuses on specialized diagnostic testing & treatments for individuals with complex medical conditions including Autism, Rheumatoid Arthritis, Mental Health Disorders & other chronic health conditions.

Dr. Woeller served as a clinical consultant for BioHealth Labs and currently serves Great Plains Laboratory, providing patient & physician education on functional & integrative medicine through one-on-one training & monthly webinars. He is on the Integrative Medicine for Mental Health Scientific Advisory Panel & is a member of the American Osteopathic Association.

Article References:

1. M. Hadjivassiliou, et. al. *Neurol Neurosurg Psychiatry.* 2002;72:560–563
2. R. Cade et al. Autism and schizophrenia: Intestinal disorders. *Nutritional Neuroscience* 3: 57-72, 2000.
3. T.C. Clarke, PhD, MPH, et. al. Trends In The Use Of Complementary Health Approaches Among Adults: United States, 2002-2012. *National Health Statistics Report.* February 10, 2015. Number 79.
4. Golden SH, et. al. Prevalence and incidence of endocrine and metabolic disorders in the United States: a comprehensive review. *Journal of Clinical Endocrinology & Metabolism.* 2009;94(6):1853–1878

Add Functional Medicine To Your Practice

The Functional Medicine Mastery Course from Integrative Medicine Academy is designed for anyone interested in health and wellness, including existing health professionals who are looking to greatly increase their knowledge and skills regarding the principles and practices of functional medicine. This includes the use of functional medicine laboratory testing, nutrition, supplements, wellness protocols and clinical correlation and troubleshooting.

This course focuses on a variety of topics including where to start and how to properly implement functional medicine, clinical intake, symptom survey, laboratory test interpretation, case reviews, nutritional supplementation and other intervention protocols for adrenal, blood chemistry, gastrointestinal, hormone and metabolic imbalances often seen in people with chronic health problems.

This 12 Module Course Includes:

- Live Lesson Webinars (also Recorded for Later Review & Study).
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