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FREE

PUBLIC HEALTH ALERT

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Leading Experts Gather to Decode the Mystery of Chronic Illness

by Scott Forsgren

Healthy Medicine Academy, in conjunction with Researched Nutritionals, recently hosted "Decoding the Mystery of Chronic Illness" in Phoenix, Arizona. The primary focus of the event was to review approaches for treating persisting infectious inflammation. The event featured many of the top experts in the chronic illness landscape including Joseph Burrascano Jr. MD, Norton Fishman MD, Stephen Fry MD, Carol Ann Ryser MD, and other leaders in the field.

The sessions were attended by practitioners from North America, Europe, and Australia. It was a weekend filled with the very latest research, case studies, and treatment approaches aimed at those recovering from chronic Lyme disease and other debilitating conditions.

The intent behind this article is to cover the highlights of this highly informative event. For additional details, DVDs are available from Researched Nutritionals.

Dr. Joseph Burrascano, Jr. MD - "Clinical Update on Tick-Borne Diseases"

The evening prior to the formal event, Dr. Burrascano spoke at a gathering hosted by the Arizona Lyme Disease Association and shared a "Clinical Update on Tick-Borne Diseases". While Dr. Burrascano covered the history and the nuts and bolts of Lyme, he also shared a number of new items which were quite informative as he is always on the leading edge of Lyme disease diagnosis and treatment.

Dr. Burrascano noted that indirect tests such as the ELISA, the IFA, and the Western Blot are notoriously unreliable as they are looking for a "shadow of exposure to a germ". One of the most exciting aspects of his talk was a discussion of the relatively new *Borrelia* culture test from Advanced Laboratory Services.

The early pioneer in culturing *Borrelia* organisms was Alan B. MacDonald MD. Dr. MacDonald developed the original *Borrelia* culture over twenty years ago. After patient treatment, he was able to see the persistence of Lyme spirochetes in the culture. Dr. Burrascano asked the audience, "How can you call it Post-Lyme Syndrome if Lyme organisms are still there?" Ongoing symptoms may represent ongoing and persistent infection.

Even though Dr. MacDonald's culture test was validated three times, his opponents took the position that his work was fraudulent. As a result MacDonald was forced to leave the Lyme field for over two decades. Fortunately for us, he has since returned.

More recently, Dr. MacDonald and Dr. Eva Sapi PhD worked as consultants with Advanced Laboratory Services to create the modern *Borrelia* culture test. The test is revolutionary in terms of both its sensitivity and specificity. The sensitivity of the test increases the longer that the culture is observed from 47% after 1 week to 94% after 16 weeks. When confirmed via DNA/PCR testing, the specificity is 100%. Existing indirect methods of testing may have sensitivity as low as 50-70% and in some cases may report false positives; which are not possible with the culture as it is looking for the actual bacterium and not an antibody response that relies on a healthy immune system. Some have even been able to use a positive culture test in order to get insurance coverage for their treatment. The culture test is generally the most sensitive if the blood is drawn in the late afternoon.

Coinfection testing, such as for *Bartonella* or *Babesia*, may be even less reliable than testing for *Borrelia* as commercially available tests can only test for a small number of the total known strains.

Another important point that Dr. Burrascano has made repeatedly over the years is the importance of testing blood levels for antibiotics. For example, at low doses, Doxycycline is bacteriostatic and not bactericidal. If someone is not properly absorbing the antibiotic or the dosing is too low, the therapy is ultimately ineffective and may even promote resistant organisms. Ensuring that therapeutic doses of antibiotics are reaching the bloodstream is a critical part of optimizing treatment outcome.

Dr. Joseph Burrascano

Dr. Burrascano noted that the goal of treatment is to decrease Lyme germs while simultaneously building up the immune system. It is about balance and not about eradicating every single germ. The most important things one can do in support of building up the immune system is to get proper sleep and to exercise according to a program devised to improve T cell function.

The exercise program recommended by Dr. Burrascano includes whole body workouts with weights or resistance machines. The weight should be light with many repetitions. It should last for 45-60 minutes, but if one cannot tolerate that level of exercise, it is still important to start with whatever can be done. There is a progressive warm-up before exercise and stretching of the entire body after the workout. There should be no aerobic exercise. This program is done only every 3-4 days and never on consecutive days. This style of exercise supports improved health and function of the T cells which is critical for recovery.

Intravenous immunoglobulin, or IVIG, therapy is an underutilized treatment option that can repair nerve damage often present in long-term Lyme disease. Furthermore, IVIG can help to reduce cytokine storms thus reducing inflammation without negatively impacting the immune system. Dr. Burrascano recommends testing for damage to small nerve fibers as seen on skin biopsy, and also measuring total IgG and IgG subtypes and, if nerve damage is found or if immunoglobulin levels are low, considering IVIG therapy.

A low glycemic, low fat diet is suggested. Alcohol is not allowed as it makes the overall condition worse. When *Borrelia* is incubated with alcohol, it induces heat shock proteins and makes the infection far more toxic. Alcohol makes spirochetes more aggressive and damages the immune system.

Steroids should not be used unless on aggressive antibiotic therapy. Exercise must be performed regularly. Rest is mandated, and sleep must be sound. Several key nutritional supplements are also recommended.

Useful supplements include probiotics, kefir, and soil-based organisms. Probiotics should be rotated amongst several types. A multivitamin with minerals is suggested. CoQ10 is indicated unless Mepron or Malarone are being used. NT-Factor often helps with fatigue. Vitamin D supports the immune system and is anti-inflammatory. Essential fatty acids such as krill oil, borage oil, or coconut oil are necessary. Magnesium can be started only after one is on an antimicrobial program; this is done to avoid the potential of adding to the biofilm burden. Lyme-specific transfer factors assist the immune system in recovering from the disease. Methyl-B12, B-Complex and methylation cycle block treatments are often highly beneficial.

Finally, Dr. Burrascano stressed the importance of a healthy attitude. He suggested cherishing the good things in life and minimizing or ignoring the bad. Losing anger and not feeling sorry for yourself promotes an attitude for recovery. He noted that becoming "Lyme-obsessed" is not healthy. One should pursue other interests and find distractions from their current situation. Through the journey, we should not lose the person that we are.

Dr. Norton Fishman MD - "Multiple Symptoms, Multiple Systems, Multiple Doctors" and "What is Persisting Infectious Inflammation?"

Dr. Norton Fishman finds that inflammation is a common denominator in chronic illness. Often times, microbes are the initiator of the inflammation. He noted that "inflammation is the immune systems encounter and response to microbial stimuli in the context of tissue injury." Inflammation presents when the immune system is attempting to get rid of an unwelcomed invader. The inflammation itself may be the cause of many of the ongoing symptoms of illness and can be the ongoing trigger that keeps the illness chronic.

According to Dr. Fishman, our microbial defense systems can be divided into three levels. These are: 1) anatomic and physiological barriers such

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as the skin, proper stomach pH, and mucous clearance systems, 2) innate immunity which detects invaders and quickly mounts a protective inflammatory response while activating the adaptive immune system, and 3) adaptive immunity which consists of T cells and B cells and is responsible for creating long-lived immunity to specific pathogens.

The ABCs of the inflammatory response to infection include the Antigen (microbes or foreign particles), the Barrier (antigen attack), and the Cytokine cascade. The antigen is the invasion, the barrier is involved in recognition, and the cytokine cascade is the response.

Microbes contain various pathogenic antigens which the immune system recognizes. These include lipopolysaccharides contained in gram-negative bacteria, lipoproteins found in spirochetes, proteoglycans associated with gram-positive bacteria, flagella, DNA and RNA of viruses, and zymosan from the cell-wall of various fungi.

Pattern recognition receptors (PRRs) are expressed by the innate immune system and are involved in recognition of pathogen-associated molecular patterns (PAMPs) discussed in the previous paragraph. PRRs tell the body that there are foreign proteins present. Macrophages are a component of the innate immune system and are known as the "big eaters". They, along with the dendritic cells, are further involved in the initiation of defenses that make up adaptive immunity.

Next follows the cytokine cascade. NF-κB is a key protein in the immune system and tells our DNA to make proteins to fight microbial invasion. It is involved in the expression of several hundred genes that encode various cytokines, chemokines, and enzymes that regulate both the innate and adaptive immune response.

Cytokines can be pro-inflammatory such as IL-1, IL-6, IL-12, IFN-y, and TNF–α or anti-inflammatory such as IL-4, IL-5, and IL-10. Pro-inflammatory cytokines are part of the body's immune response to pathogens and signal the body to send in defenses such as macrophages and T cells to areas of infection.

The immune system consists of several types of T-helper cells: namely Th1, Th2, and Th17. Th1 lymphocytes are pro-inflammatory and are involved in the response to intracellular organisms. Th1 immunity is influenced by IL-12 which leads to the production of IFN-y and blocking of Th2 response.

Th2 lymphocytes quiet the cytokines that lead to inflammation and are involved in immunity related to allergic response and extracellular parasites.

Dr. Fishman made the analogy to the movie "The Good, The Bad, and The Ugly" with Clint Eastwood and suggested that IL-10 is "the good", IL-6 is "the bad", and TNF–α is "the ugly". IL-10 is an anti-inflammatory cytokine and downregulates the expression of Th1 immunity. IL-6 can be both pro-inflammatory and anti-inflammatory and is produced by both the Th1 and Th2 arms of innate immunity. It can promote inflammation, lead to muscle wasting, and cause endothelial dysfunction. Further, IL-6 antagonizes insulin and as a result can lead to weight gain and insulin resistance. TNF–α is a pro-inflammatory cytokine produced by Th1 macrophages. It is a master regulator of the entire cytokine cascade, is involved in systemic inflammation, and can result in muscle breakdown and high cholesterol.

Th17 is involved in the immune response to extracellular pathogens and is a likely contributor to autoimmune diseases. Th17 cells produce IL-17. It is highly pro-inflammatory and is induced by *Borrelia*. Continuing with the analogy above, Th17 is like "The Terminator" with Arnold Schwarzenegger.

In chronic infections, inflammation is an ongoing presence. It is thought that statin drugs may have anti-inflammatory properties and that cholesterol often rises when inflammation is present.

A Herxheimer reaction is an exaggerated inflammatory response in active Lyme disease. It is in excess of what the body can handle. The effects of exaggerated inflammation are prolonged sickness, cognitive impairment, malaise, pain, depression, and neurological disease.

Ways to minimize Herxheimer responses include:

- Pulling back the throttle on the treatment inducing the reaction
- Salicylates and NSAIDs
- Omega-3 oils
- Zinc
- Anti-inflammatory herbs
- Enzymes
- Statins
- Thiazolidinediones (such as Actos)
- Probiotics
- Vitamin D3

When Vitamin D 1,25 is high and D, 25 is low, this is a sign of an inflammatory response in activated macrophages often seen in active Lyme disease. This can also be seen in sarcoidosis, a much less common disease. An ideal D, 25 level would be around 60. The desired form of Vitamin D for supplementation is D3.

Through several key mechanisms, bacteria evade being killed by antibiotics. These include the formation of biofilms, phenotypic variation (persister cells which are slow growing and insensitive to treatment and the ability to change form into granules, blebs, and cysts), and genetic mutation which makes the organisms less susceptible to therapy. It is primarily the ability to produce biofilms and to change forms that makes treating chronic bacterial infections such as *Borrelia* quite difficult.

Due to these challenges, several different antibiotic strategies are often employed. These include pulsing, combination therapy, cyst busters, selective targeting antimicrobial peptides, antibiotic-generated hydroxyl radicals, and addressing biofilms.

Jeremy Ellis PhD - "Clinical Laboratory Technology - Microscopic, Serologic, and Molecular Markers of Disease"

Dr. Jeremy Ellis is the laboratory manager of Fry Laboratories in Scottsdale, Arizona. He presented on the various technologies available in testing for vector-borne diseases.

The main technologies that are used in laboratory testing today include microscopy, serology, and molecular diagnostics. Each of these technologies has pluses and minuses. Dr. Ellis articulated the test parameters of each of the primary technologies available. These parameters included the type of test, detection, specificity, and sensitivity. The type of test can be either direct or indirect (meaning it is looking for the actual organism or other indirect evidence of the organism, such as host antibodies). The detection capabilities of a test could be broad spectrum or narrow. The specificity of a given test is how specific is the identification of a given sample and was described as either mixed or accurate. The sensitivity of a test may be moderate, complicated, or exceptional depending on how many organisms must be present for detection.

Microscopy is an older standard. Under the microscope, one can see organisms such as *Plasmodium*, *Babesia*, spirochetes, filaria, and other organisms. It can be diagnostic and "seeing is believing". However, the information obtained is often very general, the organism must be present in the sample being observed, and microscopy is very skill and technology dependent.

Serology tests generally look at blood or other fluids for antibodies to a given antigen and are thus indirect tests. One advantage is that serologies do not require that the organism itself is present in the blood sample being tested. It can be diagnostic, and in some cases, can be used to determine whether the condition is acute or chronic. The downside of serological testing is that it requires a competent immune system that is capable of creating antibodies and there can be cross-reactivity with other organisms.

Molecular diagnostics look for specific states of health or disease by studying molecules such as DNA and RNA. These are exceptionally sensitive and specific. They can not only be diagnostic but can be quantitative. It is a direct test and thus also requires the organism to be present in the sample.

An ideal testing method would be direct, broad spectrum, accurate, and have exceptional sensitivity. DNA sequencing has all of these attributes and is the upcoming gold standard for vector-borne and infectious disease testing.

Test Technology	Type of Test	Detection	Specificity	Sensitivity
Microscopy	Direct	Broad Spectrum	Mixed	Moderate
Serology	Indirect	Narrow	Mixed	Complicated
Molecular Diagnostics	Direct	Moderate	Accurate	Exceptional

Dr. Ellis covered various vector-borne coinfections such as *Babesia*, *Bartonella*, *Anaplasma*, *Ehrlichia*, *Rickettsia*, *Toxoplasma*, and *Coxiella*.

Babesia is an apicomplexan or protozoan organism which can lead to malaise, fever, chills, arthralgia, fatigue, headache, weakness, enlargement of the liver and spleen, and anemia. Clinical manifestation often takes 1 to 4 weeks after an exposure. Species that infect humans include *Babesia microti*, *Babesia duncani*, *Babesia divergens*, and *Babesia bovis*.

Bartonella is an alphaproteobacteria and can live both inside and outside of red blood cells. There are at least 50 different species with 8-10 of them known to infect humans. Any of these that can infect dogs can also infect humans. *Bartonella* is known to attack the lining of the vascular system. It can result in fever, malaise, swollen lymph nodes, enlargement of the spleen, arthralgia, and mylagia. The common species infecting humans include *Bartonella henselae*, *Bartonella quintana*, *Bartonella bacilliformis*, and *Bartonella elizabethae*.

Anaplasma and

"Experts" ...cont'd pg 3

Public Health Alert

The PHA is committed to researching and investigating Lyme Disease and other chronic illnesses in the United States. We have joined our forces with local and nationwide support group leaders. These groups include the chronic illnesses of Multiple Sclerosis, Lou Gehrig's Disease (ALS), Lupus, Chronic Fatigue, Fibromyalgia, Heart Disease, Cancer and various other illnesses of unknown origins.

PHA seeks to bring information and awareness about these illnesses to the public's attention. We seek to make sure that anyone struggling with these diseases has proper support emotionally, physically, spiritually and medically.

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Ehrlichia are alphaproteobacteria that can lead to fever, myalgia, headache, chills, rash, and gastrointestinal issues. *Ehrlichia muris* is an emerging species in Florida. The most common species include *Anaplasma phagocytophilum, Anaplasma marginale, Ehrlichia chaffeensis, Ehrlichia canis, Ehrlichia ewingii,* and *Ehrlichia muris*. These are intracellular organisms.

Rickettsia is an alphaproteobacteria that can result in fever, rash, and flu-like symptoms. It acts very similarly to a virus. It is tick, lice, mite, and flea-borne. *Toxoplasma gondii* is believed to be an issue in 10.8% of the population of the United States. It forms cysts within the tissues and even in the brain and generally does not go away. It can lead to retinal damage, organ damage, and encephalitis. Cats are one of the primary reservoirs of *Toxoplasma*, which is the reason pregnant women are warned not to change litter boxes while pregnant. *Coxiella* causes the disease commonly known as Q-Fever and leads to headaches, chills, and respiratory symptoms. It is extremely contagious and can be transmitted via ticks or in milk and is a known biowarfare agent.

Dr. Stephen E. Fry MD - "Vector-Borne Diseases, Biofilm Communities, Protomyxzoa Rheumatica: Mechanisms of Persistent Infections"

Biofilms, also referred to as "slime", are "a structured community of bacterial cells enclosed in a self-produced polymeric matrix and adherent to an inert or living surface". The most powerful glues known to man are made by bacteria.

Biofilms impact teeth, drinking water, pipes used in oil recovery, cooling water, food processing, ship hulls, and medical implants. Most urinary catheters are coated with silver as silver is a known anti-biofilm agent.

Dr. Fry and his lab, Fry Laboratories, have been investigating the role of a protozoan organism known as *Protomyxzoa rheumatica* (formerly FL1953) and biofilms in many different chronic health conditions. They postulate that protozoan organisms may be involved in chronic rhinosinusitis. In Cystic Fibrosis, several organisms may be involved, but once the bacteria *Burkholderia cepacia* is present and begins to produce biofilms, life expectancy is generally two years or less. Kidney stones may be the result of biofilm-forming nanobacteria. Very simple organisms can create biofilms; it is possible that even viruses create biofilms.

Chronic, non-healing wounds are often associated with biofilms. Biofilm pods colonize the bladder in chronic urinary tract infections. Biofilms are often a factor in osteonecrosis of the jaw, and in these cases, 2-15 different types of organisms that are not considered normal periodontal flora may be present.

Culturing for routine infections is often very useful. However, biofilm organisms are difficult to culture. Biofilm infections are chronic in nature and very difficult to eradicate. Pathogens are protected from antimicrobial therapies by the biofilm, and the immune system is unable to eradicate these protected pathogens. It has been suggested that inflammation nourishes biofilm communities. Biofilms are the rule in nature, not the exception.

Biofilms consist of numerous microorganisms, extracellular polymeric substances, proteins, DNA, calcium, magnesium, and iron. Biofilms play a role in many chronic diseases. They like flow environments and, along with *Protomyxzoa rheumatica*, may play a role in CCSVI (chronic cerebrospinal venous insufficiency).

Protomyxzoa rheumatica appears to be an emerging infection in those with Lyme disease and many other chronic conditions such as Chronic Fatigue Syndrome, Rheumatoid Arthritis, Scleroderma, Parkinson's, MS, and ALS. *Protomyxzoa* is an inflammatory trigger and vascular pathogen. It is similar in many ways to *Toxoplasmosis, Malaria,* and *Babesia*, but is also a profound biofilm former. It may ultimately be the cause of most neurological diseases.

ALS may be the result of the combination of *Protomyxzoa* and the bacteria *Ralstonia*; both of which are profound biofilm formers that ultimately affect the substantia nigra, an area of the brain that produces dopamine.

Protomyxzoa does have a flagella and thus may be one explanation for a positive 41 kDa band on Western Blots for *Borrelia*.

Plaquenil, Methotrexate (folic acid antagonist; *Protomyxzoa* uses folic acid), herbals, enzymes, mechanical removal of biofilm, antiprotozoals, and antimalarials are currently used for treatment. Some antimalarial treatments such as Clindamycin, Minocycline, and Biaxin have shown to be helpful in treating *Protomyxzoa*. Magnesium and arginine are contraindicated in Dr. Fry's treatment approach as these benefit the *Protomyxzoa*. Fats are restricted using the McDougall diet as fats are used by the organism for replication and as a component of the biofilm; the amount of *Protomyxzoa* observed via laboratory testing directly correlates to the amount of fat in the diet.

David Berg MS - "Underlying Pathophysiology: Hypercoagulation"

One of the very common issues in chronic illnesses which have chronic infections as an underlying factor is thick blood or hypercoagulation. When the blood is too thick, treatment has not been optimized and outcomes are often disappointing.

Inflammation and lack of blood flow are hallmarks of many chronic disease states. When the immune system is activated, this leads to inflammation which activates the clotting cascade. Inflammation combined with coagulation defects and pathogens leads to fibrin build-up in the capillaries and chronic illness.

Dr. Stephen E. Fry

There are many different types of coagulation defects and when each is considered separately, these impact only a small portion of the population, but when looking at the sum total of the possible defects, at least 1 in 4 people are impacted.

Activation of the coagulation system can be triggered by many different factors such as viruses (*HHV-6, CMV, EBV, HSV-1, HSV-2, Parvovirus, Herpes Zoster*), bacteria (*Mycoplasma, Chlamydia, Borrelia, Brucella, Staph, Strep, Ehrlichia, Bartonella*), yeast (*Candida*), parasites (*Babesia, Protomyxzoa rheumatica*), vaccinations, heavy metals, chemicals, and trauma.

The ISAC (Immune System Activated Coagulation) panel from Esoterix Labs is a group of blood tests that demonstrate how activated the coagulation system is. With expert interpretation of the results, one can determine appropriate therapies. These may include fibrinolytics such as Bromelain, Wobenzym, Serrapeptidase, Endozyme, Nattokinase, Lumbrokinase and anticoagulants such as Heparin. Berg suggests that in his experience, Boluoke (a specific Lumbrokinase product) is the best option for many people.
Lumbrokinase is approximately 50-100 times more effective than Nattokinase and is capable of dissolving debris both inside and outside of the blood vessels. Boluoke seems to help both with fibrin accumulation and reduction of biofilms. Boluoke can be taken with or without food.

As fibrin is deposited in the capillaries, tissues do not get necessary oxygen. Nutrients and hormones cannot enter tissues, and waste products cannot be removed.

Coagulation is also triggered by an increase in fat cells. The more fat we carry, the more cytokines our body will have which plays a role in inflammation. Losing weight improves both inflammation and coagulation.

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Berg is an expert at interpreting traditional CBCs as well. For example, a low white blood cell (WBC) count with elevated neutrophils and depressed lymphocytes is commonly seen in *Borrelia* infections. He suggests that when eosinophils are elevated even at 4-6, one should check for parasites. When 3 times the hemoglobin value is 1% or more below the value of hematocrit, this may suggest or be an indicator of *Babesia* or *Protomyxzoa* infections, both of which leach iron from RBCs to live.

Author Note: Evaluating for hypercoagulation with an ISAC panel is a key part of a well-planned treatment approach. I have personally done it more than once over the years and am in the process of doing it again. Once the results are received, your doctor can schedule a consultation with David Berg to better understand what the findings mean and what treatment options may be appropriate.

Ruth Kriz APRN - "Underlying Pathophysiology: Diagnosis and Treatment of Coagulation and Resultant Cascading Issues"

Approximately 20% of the population is genetically predisposed to coagulation problems. However, in people with chronic illness, this number doubles to at least 40% having a genetic predisposition resulting in a coagulation issue. Inflammation and infections trigger a thickening of the blood, or hypercoagulation, and ultimately biofilm formation. Inflammation is the trigger for the cytokine cascade as well as the production of fibrin which is a component of biofilm.

While some people may feel better as a result of biofilms walling off various infections, biofilms must be addressed over time in order to optimize clinical outcomes. Biofilms consist of many different types of microbes. The microbes living within a biofilm are 1,000 times more resistant to antibiotic therapy. Gene transfer is facilitated within a biofilm community such that the biofilm community becomes more stable and more resistant to treatment.

Kriz uses the ISAC panel (discussed previously in this article) as a way to evaluate the state of the coagulation system. When indicated, Boluoke is often helpful for breaking down biofilms and releasing the infections within the biofilm community.

Within the ISAC panel, CD62P can be used as a marker of viral load. Viruses can trigger an increase in fibrinogen. Antivirals such as andrographis and transfer factors may be helpful in normalizing CD62P.

Coagulation issues are often addressed by reducing the infectious triggers, decreasing inflammation through modulation of Herxheimer reactions and reduction in toxic burden, breaking down fibrin with enzymes and other therapies, preventing clotting risk with Heparin or Lovenox, and addressing genetic predispositions.

Carol Ann Ryser MD - "Central Nervous System Inflammation Secondary to Persisting Inflammation"

Dr. Ryser's journey into the treatment of chronic illnesses such as Lyme disease came in the early 1980's when she had a Lyme patient that had previously been diagnosed as schizophrenic.

PET and SPECT scans are ordered to look at inflammation in the brain which she calls "The Fire Within". Various microbes can be the cause if ongoing inflammation. *Enterococcus* is a "nasty bug" which can lead to interstitial cystitis and diarrhea. The virus *Coxsackie* is a huge problem which can lead to Fibromyalgia, gastrointestinal problems, and inflammation of the heart. *HSV-1* can cause inflammation of the brain.

Stressors that stimulate inflammation include infections, surgery, emotional trauma, gastrointestinal disease, heavy metals, toxins, vector-borne diseases, child birth, autoimmunity, cancer, obesity, Chronic Fatigue Syndrome, Fibromyalgia, and diabetes.

5 million Americans have Alzheimer's disease, and people over age 85 have a 50% chance of developing the condition. By 2050, over 100 million people worldwide will have the condition with 15 million of those in the United States. Alzheimer's is related to inflammation of the brain and accounts for 50-80% of cases of dementia. 200,000 people have Alzheimer's disease before the age of 40.

The pancreas and brain need glucose to survive. New research shows the brain makes insulin. Insulin is produced in the brain independent of its production in the pancreas. Aerobic metabolism uses glucose and insulin; whereas anaerobic metabolism uses ketones.

There are several ways to increase ketones including a high fat (long-chain carbon fats such as C8-C12, MCT, and Coconut oil), low glucose, low protein diet. Foods that contain medium chain fatty acids are easily absorbed and converted into ketones by the liver. These ketones can cross the blood-brain barrier and serve as fuel for the brain. They have an ability to activate neurons independent from glucose and insulin. In some cases, seizures can be due to insulin/glucose malfunction, and a ketogenic diet may be helpful in controlling the condition.

Some of the items which negatively impact the brain include: obesity, smoking, hypertension, lack of exercise, sleep apnea, diabetes, hypercoagulation, oxygen deprivation, inflammation, infections, drugs, alcohol, and some medications such as statins.

Hypoglycemia of the brain combined with inflammation leads to many cognitive symptoms; which leads to eating more and eventual weight gain. Insulin is needed to allow glucose into a cell and is converted into ATP which provides energy needed for life. Neurons in the brain, however, can utilize ketones as energy; entirely bypassing the glucose/insulin system. The Atkins and South Beach diets are mild ketogenic diets.

Ketones are made from medium-chain triglycerides (MCT/coconut oils). Ketones produce twice as much ATP as glucose and can cross the blood-brain barrier. Consuming MCT/coconut oil coverts to ketones but does not reach the level of ketoacidosis seen in diabetes.

Diabetes is a condition that 26 million Americans struggle with; while 79 million have prediabetes. Diabetes leads to risk of increased blood pressure, heart disease, stroke, problems in the nervous system, pain in the extremities, and ultimately poor wound healing and dementia. Hypoglycemia results when there is too much insulin for the amount of carbohydrates that have been consumed. Symptoms include twitching, seizures, confusion, cognitive issues, fatigue, muscle weakness, memory loss, insomnia, and tremors.

Alzheimer's disease is now termed "Type 3 Diabetes" given that there is reduced insulin in the brain, an abnormal signaling pathway for the use of energy, and abnormal mitochondrial function. There are overlaps between Alzheimer's disease and Type 1 and Type 2 diabetes.

From a genetic perspective, ApoE4 types often have recurrent fever blisters and are up to 15 times more likely to developer Alzheimer's than the average person. This gene can be turned on and off by various environmental factors through what is termed "epigenetics". Environmental influences may include air pollution, pesticides, nutritional deficiencies, heavy metals, chemicals, smoking, alcohol, depletion of cholesterol, and other factors. Cholesterol-lowering medications that lower cholesterol below 150 should be avoided.

Beta-amyloid plaques are observed in Alzheimer's brains. Recent thoughts suggest that these may be the immune system's response to infection and not the cause of the disease. *HSV-1*, or *Herpes Simplex 1*, causes cold sores and is a potential contributor in Alzheimer's as it is found in elderly brains. It is found in 90% of beta-amyloid plaques, and the virus increases a protein that causes tangles to form in the brain.

Dr. Carol Ann Ryser

Fatty acids found in coconut oil dissolve the lipid capsule around the virus which can kill it. Valtrex has a similar effect. Viruses may be a factor in many chronic illnesses; even diabetes.

Alzheimer's disease involves mitochondrial dysfunction, and ketones can be beneficial in addressing this. Ketones are efficient producers of ATP, or energy in the mitochondria. They also improve the function of the heart by up to 30%.

Nitrosamines are chemical compounds found in many foods including beer, fish, meat, and cheese and any products preserved with nitrites. These compounds form toxic ceramides in the liver which can cross into the brain destroying insulin-producing cells and leading to insulin resistance. This leads to a decrease in the uptake of glucose and to cell death resulting in tangles in the brain and the explosion of virus replicating factories.

Much of the research into coconut oil and Alzheimer's disease evolved from the work of Dr. Mary Newport MD as she attempted to slow the progression of her husband's own Alzheimer's disease.

Except for pregnant women which concentrate MCTs in breast milk, human beings do not make ketones; thus they must be sourced primarily from coconut oil and palm kernel oil. Coconut oil and MCT oil can delay the onset of Alzheimer's disease and even reverse the condition in some people.

For dementia or Alzheimer's disease, Ryser considers things like Heparin, Boluoke, or Hydralyte (an electrolyte/glucose formulation) to address oxygen deprivation; CoQ10, magnesium, D-Ribose, NADH, NT Factor, amino acids, growth hormone, essentially fatty acids, and vitamins to address mitochondrial impairments; an alkaline diet combined with phosphatidylcholine; and MCT oil and coconut oil. For older people with Alzheimer's, a prescription medical food called Axona may be used to increase ketones.

In patients with chronic illnesses, working on the brain often helps to resolve many aspects of the condition. Thus, ketones may be an ideal brain food. Ryser recommends a mixture of 12 ounces of coconut oil with 16 ounces of MCT oil stored at room temperature. The oils only stay in the body for about eight hours and can be taken with or without food. Dosing starts at 1 teaspoon per day and works up to 2 tablespoons three times per day. The last dose should be at bedtime to avoid becoming hypoglycemic and sleep deprived. Some report significant improvement in sleep with the oils. The oils can even be frozen in ice cube trays with chocolate to make a tasty popsicle.

Coconut oil is an antiviral and can be quite useful in downregulating viral activity. Many children respond very well to the ketone protocol in an attempt to control seizures. Ryser puts many of her patients with diabetes, chronic inflammation, infections, memory problems, and chronic illness on an alkaline diet and on MCT/coconut oil.

Another useful option is the YES Ultimate EFA Parent Essential Oils (PEOs) product. These oils heal the vascular system and reduce inflammation while improving circulation. The body converts these plant oils into Omega 3, 6, 9, and DHA.

Ryser often uses Benadryl to support proper sleep and finds that it can be helpful for Herxheimer reactions. Lumbrokinase can also be helpful when experi

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encing Herxheimer symptoms. Curcumin is used to both reduce fibrinogen and quell inflammation.

Much of the research that has come out of the Alzheimer's world around insulin and the brain combined with inflammation may explain many of the symptoms commonly observed in chronic illnesses such as Lyme disease. Addressing insulin deficiencies, infections, inflammation, and hypercoagulation is key to both the treatment of Alzheimer's disease and the treatment of vector-borne illness and other inflammatory processes or toxic exposures.

Dr. Joseph Burrascano, Jr. MD - "The Paradigm for Persisting Infectious Inflammation"

Over time, more and more people are presenting with complex and difficult to treat chronic illnesses. Some of these such as Chronic Fatigue Syndrome, Fibromyalgia, Autism, MS, ALS, and others have no clear etiology. One common denominator is that these conditions seem to follow geographic distributions which would lead one to consider these to be infectious conditions. Maps of the spread of autism over decades appear consistent with what would be observed with the spread of infectious disease over the same time period. All of these conditions involve the immune system, cytokine cascades, and resulting activation of inflammation.

Borrelia inhibits B cells, T cells, and NK cells and reduces their populations. B cells remain perpetually activated in Lyme disease. There is an upregulation of pro-inflammatory cytokines with a concurrent downregulation of anti-inflammatory cytokines.

Borrelia has many unique characteristics. It can survive in ticks, mammals, reptiles, and birds. It changes form between spiral, cystic, and granular forms as a protective mechanism in response to environmental stressors. It grows very slowly; much like Tuberculosis. Given that its replication cycle is so long, longer term treatment is required. *Borrelia* produces its own biotoxin known as "Bb Tox 1". It may have periods where it is dormant and does not continue to divide, but it continues to produce toxic products which promote ongoing inflammation. If the organism is not in an active growth phase, antibiotics will not kill it.

As a protective mechanism, *Borrelia* creates biofilms which makes treatment even more difficult. The lead biofilm researcher in the world of Lyme disease is Dr. Eva Sapi PhD. Biofilms "protect the resident individuals from host environments such as host immune system attack or antibiotic therapy". Biofilms consist of a polysaccharide matrix secreted by *Borrelia* and other organisms, a gummy substance called alginate, calcium, proteins, lipids, and other substances. Organisms protected within a biofilm community are 1,000 times more resistant to antibiotic therapy. These biofilm communities are not static; organisms enter and leave this protected space regularly.

Biofilms incorporate calcium, magnesium, and iron, and over time, they harden and get "crunchy". Dr. Cecile Jardin is an expert in Rickettsial infections and finds that it is best to avoid taking iron or magnesium until after a patient is on antibiotic therapy. In research studies, the combination of NutraMedix Samento and Banderol dissolved biofilms and made *Borrelia* more susceptible to antibiotic therapies such as Doxycycline or Tinidazole.

Dr. Dietrich Klinghardt believes that the endothelium, or lining of the blood vessels, is a reservoir for microorganisms. Biofilm communities protect these organisms, and the end result is ongoing infection and ongoing generalized inflammation.

Alan MacDonald MD studied the brains of those with Alzheimer's and found *Borrelia* DNA in many of the samples. Judy Miklossy MD, PhD found *Borrelia* in the brain 13 times more frequently in those with Alzheimer's (90%) than without. Beta amyloid, which is commonly seen in Alzheimer's, can be induced by *Borrelia* in tissue cultures. Interestingly, *Treponema denticola*, a dental spirochete, has also been found in the brain.

Given the known impacts of *Borrelia* on health, early and accurate diagnosis is important. A test must be available that is bulletproof and eliminates false negative and false positive results.

There are over 300 different strains of *Borrelia* and the existing serologies are often based on only 1 or 2 of these. Existing serological tests may have sensitivities as low as 29-68%. The more ill a patient is, the less sensitive serological testing will generally be.

PCR sensitivity may be as low as 30%. Additionally, PCR testing may detect non-living *Borrelia* DNA. Furthermore, PCR tests are generally not accepted as proof of infection by insurance companies.

A new gold standard has emerged with the recent *Borrelia* culture test. A culture can be used to see if a person is still infected with living *Borrelia*. It can isolate all strains of *Borrelia* and then narrow them down and precisely identify any cultured organisms.

In the past, culturing *Borrelia* was very difficult as the microbe is very slow-growing. Alan MacDonald MD was a pioneer in the early days and created a technique for culturing *Borrelia*. However, at that time, it could take up to 10.5 months for a positive culture to be returned. The key to creating a viable culture test was to create a culture system that matches the nutrients and environmental conditions of a living host. Advanced Laboratory Services in Pennsylvania has now made a *Borrelia* culture commercially available. The test is approximately 94% sensitive and 100% specific.

A positive culture result indicates that an

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active infection was present at the time the blood was drawn. The lab has a two step process. The first step is a 7-10 day short-term culture. 43% of positive results occur during this period of time. If the result is indeterminate or negative, the culture is then moved to long-term culture for up to four additional months. It is best to have the blood drawn when a patient is symptomatic, and early afternoon is the best time of day to do the draw. For maximal test sensitivity, it is best to draw blood for the culture after having been off all antimicrobials, including antibiotics and herbs, for at least four weeks. A positive culture test may be recognized by insurance companies and has been successfully used to support coverage for IV therapy.

Treatment strategy should include supportive measures including therapy for yeast and detoxification considerations, antibiotic therapy including coverage for coinfections, biofilm busters, close follow-up with the patient including regular office visits and lab testing, and several regimens over time. Antibiotic blood levels should be measured to ensure that adequate drug levels are obtained; underdosing kills the weaker organisms and leaves the stronger ones behind. Antibiotics combinations must be utilized that cover extracellular and intracellular compartments, that consider body fluids and tissues, and that address the various forms of the organism.

There is a hierarchy of efficacy with antibiotics that starts with slight benefit from oral antibiotics, more benefit from intramuscular Bicillin, and most notable benefit from IV therapy. Burrascano mentioned that looking back, he would use far more IV therapy if he were still in active practice than he did. Some of the considerations for IV therapy include abnormal spinal fluid, inflammation of the lining of the joints combined with a high sed rate, illness lasting longer than one year, being over 60 years old, acute disseminated illness in first trimester, acute carditis, documented immune deficiency, prior use of steroid or other immune suppressants, or failure of or intolerance to oral therapy.

It takes days to weeks before *Borrelia* can recover from an antibiotic hit. Thus, pulsed therapy is often employed as it is not always necessary to be on antibiotics on a daily basis. Some practitioners use a 3 days on followed by 4 days off approach. With pulsing of antibiotics and a heparin lock, it is often possible to do IV therapy without a PICC line. A pulsed approach can be used both with oral and IV medications. The exception to this is that the "azole" drugs such as Metronidazole require 14 days of continuous use to be maximally effective. 14 days on followed by 14 days off may be considered. Zithromax has a long half-life and thus is more difficult to pulse, but it may not need to be given daily. Bicillin cannot be pulsed since it is injected and long-acting. Additionally, this approach is specific to *Borrelia* and does not apply to coinfection therapeutics.

It is important to note that *Borrelia* very quickly develops drug resistance. It is not a good idea to use lower doses of medications. Doses should be full strength and pulsed.

Another antibiotic approach is called cycle therapy. With cycle therapy, one does antibiotics for several months and then stops completely. You then wait for a relapse or return of symptoms and then start treatment again. One generally waits approximately 4 weeks before restarting as it takes that long for *Borrelia* to recover and start dividing again, and for cyst forms to change back into spirochetes where they are more susceptible to therapy. Once treatment is restarted, it is done for 4-6 weeks and then the cycle is repeated.

For nerve healing, intravenous immunoglobulin (IVIG) can be very helpful, and Dr. Burrascano highly recommends this therapy to help remyelinate and heal nerve fibers. Lyme vaccine patients with documented nerve damage were able to heal the damage with IVIG therapy. IVIG mediates and calms cytokine storms which makes it anti-inflammatory; while not being suppressive to the immune system. IVIG is underutilized in the treatment of Lyme disease. Many with Lyme have IgG subclass 1 and subclass 3 deficiencies. IgG subclass testing is readily available and often very informative.

66% of those with Lyme in Long Island were shown to have *Babesia microti*. Ticks in New Jersey in one study were shown to have a higher incidence of *Bartonella* than *Borrelia*; thus *Bartonella* is a very common coinfection as well. In another study in Connecticut, ticks were shown to have *Borrelia*, *Bartonella*, *Ehrlichia*, *Anaplasma*, West Nile Virus, and nematodes. *Candida* and Flaviviruses have been identified in other studies. Those with chronic Lyme are often coinfected with *Mycoplasma*, *Chlamydia*, and *Q-Fever*. They also often express reactivation of viruses such as *EBV*, *CMV*, and *HHV-6*.

Final Thoughts

On the last day of the event, a panel discussion took place with the experts that had presented over the weekend. Some of the interesting discussion items from the panel and event attendees included:

❖ *Protomyxzoa rheumatica* may be a main cause of hypercoagulability. *Protomyxzoa* may cause significant vascular disease. Alinia and Beyond Balance MC-BAB-2 have been found by one practitioner to be useful in treating this protozoan. Another practitioner found Beyond Balance MC-PZ to be beneficial. It was suggested that herbals may have value in the treatment of *Protomyxzoa* and be less toxic than other options.

❖ Dr. Fry shared that there is no downside to a plant-based diet; though some may need to supplement B12, D3, iron, and possibly iodine. In a handful of women, BMI can go too low; should target > 22. Relative to the treatment of *Protomyxzoa*, the immune system seems to work best when fat is removed from the diet. Spinach is 10% Omega-3 and apples contain even more. Only if the patient cannot tolerate the diet, nuts or avocado may be added in some cases.

❖ *Protomyxzoa* is found in mosquitoes. In one study, 81% of mosquitoes in a highly endemic area tested positive for the protozoan. It is likely a worldwide pathogen. Treatment may consist of a plant-based diet, tetracyclines, and Plaquenil.

❖ Pain in the long bones or sternum is often related to *Babesia*. *Babesia* should be suspected when anemia is present.

❖ When there is no hair on the legs, this could be an indication of a clotting abnormality. Heparin treats biofilms as well as hypercoagulation. Heparin may be a miracle drug and may be anti-inflammatory, antimetastatic, anti-*Babesia*, and it may help to knock *Protomyxzoa* off of the vessel walls.

❖ Viral infections often raise CD57. Elevation has been observed in *beta strep* and whooping cough. CD57 is often a useful screening test, but is not always useful in tracking progress as it stays low until the very end and then rapidly rises. When CD57 is low, there is often a correlation with IgG subclass deficiencies.

❖ When CD57 is below 20, this suggests multiple coinfections. It is suspected that all of the tick-borne infections can be gestationally transmitted and *Protomyxzoa* has been found in cord blood.

❖ In one sample, 98% of patients with interstitial cystitis tested positive for *Protomyxzoa*.

❖ One practitioner observed that 40% of her interstitial cystitis patients started having symptoms after a new sexual partner. It has been observed that there is an increase in rheumatoid arthritis in people that marry someone with the condition.

❖ Antibiotics may raise INR, a measure of coagulation. Vitamin K2 may be a helpful consideration.

❖ A probiotic capsule vaginally (except when the cervix is open prior to birth) may help to protect the urinary tract.

❖ Probiotics should be taken as far away from antibiotics as possible.

While there is still more to chronic illness that needs to be understood, events such as this one move us much closer to decoding the mystery once and for all.

Resources

❖ Advanced Laboratory Services (*Borrelia* culture) - http://www.advanced-lab.com

❖ Arizona Lyme Disease Association - http://www.azlyme.org

❖ David Berg MS - david-berg@azcoag.com

❖ Jeremy Ellis PhD - http://www.FryLabs.com

❖ Norton Fishman MD - http://www.ohpmd.com

❖ Ruth Kriz APRN - http://ruthkriz.com/

❖ Stephen E. Fry MD - http://www.FryLabs.com

❖ Healthy Medicine Academy organized Decoding the Mystery of Chronic Illness. For other events hosted by Healthy Medicine Academy, visit http://www.HealthyMedicineAcademy.com

❖ Researched Nutritionals - http://www.ResearchedNutritionals.com

❖ Carol Ann Ryser MD - http://www.HealthCentersOfAmerica.com

Special thanks to Researched Nutritionals for putting on such a compelling event and for continuing to develop products which have been a great benefit to many of us.

Author Note: At the event, two practitioners sitting behind me both had tubes of Researched Nutritionals new liposomal glutathione product and both gave wildly positive testimonials of how it had cleared their brains. As a result, I've started using Tri-Fortify Orange Liposomal Glutathione as well and find it to be the first glutathione I've ever tried that actually tasted good!

Disclaimer: The content of this article is for informational purposes only. It is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Always contact your trained medical professional when making any health-related decisions. As this article was taken from the author's event notes, errors or omissions may be present. *pha*

About the Author

Scott Forsgren is the editor and founder of BetterHealthGuy.com where he shares his almost sixteen year journey through a chronic illness only diagnosed as Lyme disease after eight years of searching for answers.

Scott was honored to be awarded an "Educational Excellence Award" from the LIA Foundation for his efforts in educating the public on Lyme disease. Scott can be reached at Scott@BetterHealthGuy.com.

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ABOUT THE COMPANY

Nutramedix was founded in 1993 and currently has facilities in Jupiter, Florida, USA and in Shannon, Ireland supplying highly bio-active nutritional supplements to health care professionals and consumers.

From the beginning, Nutramedix has operated with a unique business model. First, the owners and management work diligently to operate a company according to Biblical principles– with honesty, integrity, value and respect for all people. Its corporate environment is one that works to serve both its customers and its employees, producing one the best customer service teams in the industry. Second, Nutramedix was founded with the goal of using a significant amount of its proceeds to support orphans, widows, Christian pastors and missionaries in economically distressed parts of the world. So as a customer, you are not just purchasing high quality nutritional supplements, you are helping us give back to people in need all around the globe.

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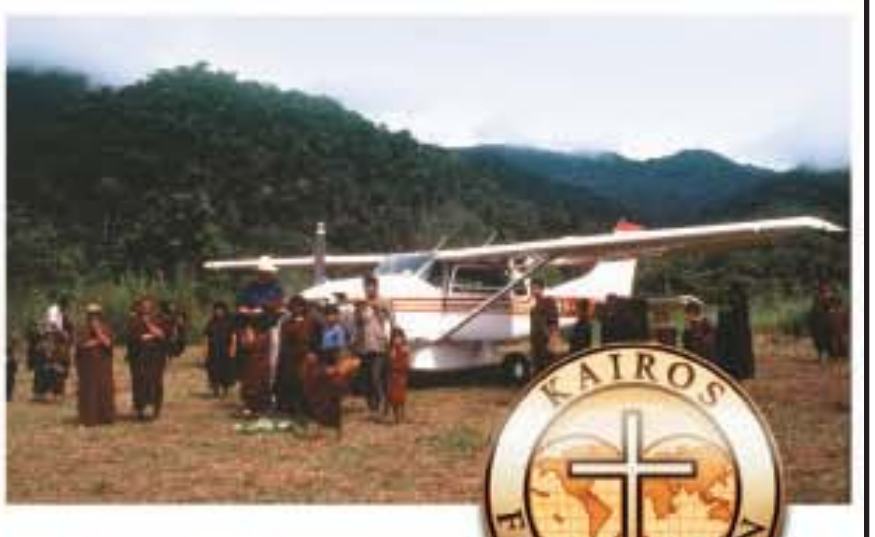
Nutramedix has made a significant investment to develop a novel, proprietary extraction and enhancement process used to manufacture its liquid extracts. The result is a highly bio-available whole plant, broad-spectrum extract that is also very cost effective. We were the first to introduce Samento, a rare chemo-type of Cat´s Claw, which has remained one of our signature products. We have since developed a full line of liquid extracts utilizing the same proprietary extraction and enhancement process.

Nutramedix also conducts extensive research to procure the very highest quality raw materials for its powdered capsule products, many of which have been designed to enhance the effectiveness of the liquid extracts. We are committed expanding our line of natural products meeting the highest expectations of health care professionals and consumers.

ABOUT THE FOUNDATION

The owners of Nutramedix have been involved in international Christian ministry since the 1980s. Prior to starting the company in 1993, our Founder and President was a missionary pilot serving tribal groups in Peru. The Kairos Foundation was created in 1995 to fund projects that address both the physical and spiritual needs of people in some of the most disadvantaged areas of the world. The foundation provides ongoing financial support for organizations operating in Africa, Asia, Eastern Europe, North America and South America.



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