

## Overview

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## Meet the Lyme Disease Experts



***Dr. Richard Horowitz has been treating Lyme and other tick-borne infections for 28 years. When he moved from Bayside, New York, to the Hudson Valley, he never suspected he'd land right in the heart of tick territory. After working in internal medicine, Dr. Horowitz opened a practice in Hyde Park, New York, where he is the medical director of the Hudson Valley Healing Arts Center. His book, *Why Can't I Get Better? Solving the Mystery of Lyme and Chronic Disease*, was published in 2013. Lyme Connection editor Janet Jemmott spoke with him about his view on Lyme and persistent illness.***

***Since your book was published, you've been interviewed on radio and television news shows. How has the Lyme community and the public responded? Have you gotten any pushback from the Infectious Disease Society of American (IDSA)?***

The Lyme community has been great – very supportive. The book is still selling well and made the NY Times Best Seller list, but in an epidemic where the CDC is admitting over 300,000 cases per year (it's more likely one to two million cases) it doesn't seem from that perspective that many copies have been sold! I don't think people realize just how bad this epidemic has gotten.

As far as the Infectious Disease Society of America (IDSA) goes, I've been trying to build bridges. At one point I invited Dr. Gary Wormser to do a Dutchess County conference with me. He accepted, but then the conference was called off. Dr. Alan Steere invited me to Harvard last year where I did a CME (Continuing Medical Education) grand rounds. I spoke about Lyme diagnostic testing and persistence,

and also about babesiosis. A few months ago, I met with Ben Beard, Chief of the Bacterial Diseases Branch of the Center for Disease Control and Prevention's Vector-Borne Diseases and discussed how we could work together. I gave him a copy of *Why Can't I Get Better?*, and explained how this is not only about Lyme disease, it's also about other strains of *Borrelia* and co-infections, especially *Babesia*, causing persistent illness in my patients. The MSIDS model – Multiple Systemic Infectious Disease Syndrome – explains why so many people don't regain their health. The MSIDS model also explains some of the controversies, and it's one way we can bridge the two camps (IDSA and ILADS).

We are making some progress. The House of Representatives passed HR 4701 sponsored by Congressman Chris Gibson (NY-19) and the bill is now before the Senate. I think it's very likely we'll get a federal bill on Lyme disease this year.

***Can you explain your MSIDS model?***

People who come to see me who have chronic Lyme disease usually have multiple overlapping factors keeping them ill. I've labeled this Lyme-MSIDS: Multiple Systemic Infectious Disease Syndrome. MSIDS is a 16-point model. First, the model is broken down into the three I's: Infection, Immune dysfunction, and Inflammation. Infection is then broken down into four different subtypes: bacterial, viral, parasitic, and *Candida* yeast infections, and many patients have several of these infections simultaneously, keeping them ill. Bacterial infections include Lyme disease and other *Borrelia* species as well as other tick-borne infections like *Anaplasma*, *Ehrlichia*, *Bartonella*, *Mycoplasma* species, Q fever, Rocky Mountain spotted fever, tularemia and *Brucella*. Then you've got viral infections showing up in ticks, like the Heartland, Powassan, and the newly discovered Bourbon virus. We don't see these viruses a lot, but we do occasionally see a reactivation of other viruses like EBV, CMV and HHV-6. I think the Powassan virus is going to be a big problem in the future. The Powassan infection rate in ticks in the Hudson Valley has risen from 1-2% to 5-6% in the past several years. It has a mortality rate between 15-30% and can be transmitted within 15 minutes of a tick bite. We therefore really need to emphasize prevention!

Then there are parasitic infections, like babesiosis, which are playing a large role in chronic Lyme; and not just *Babesia microti*, but *Babesia duncani* WA-1, which I'm finding in patients throughout the northeast. *Babesia* can suppress the immune system's ability to clear other parasites, like intestinal parasites, so oftentimes we find associated intestinal parasites playing a role. Eva Sapi (University of New Haven) also found filaria organisms in ticks, and Doctor Stephen Fry of Arizona has discovered FL-1953 protomyxzoa, which genetically comprises up to eight different parasites. All of these parasites may be present simultaneously. Finally, *Candida* may play a role in some people who have been on chronic antibiotics. The health care provider needs to look for all these infections and treat them in a comprehensive manner, or patients will continue to complain of chronic symptoms.

The second part of the MSIDS model, immune dysfunction, is very important because there are often autoimmune manifestations present, due to an overstimulated immune system from Lyme. Patients may get positive anti-nuclear antibodies (ANA), which doesn't mean they have lupus. They get positive rheumatoid factors, which doesn't mean they have rheumatoid arthritis (RA). We find these autoimmune markers, including anti-thyroid antibodies, and anti-ganglioside antibodies (which are associated with neuropathy – tingling, numbness, burning) – and can also be associated with POTS (postural orthostatic tachycardia syndrome)/dysautonomia. These people come in with low blood pressure and palpitations, saying they feel tired, dizzy, and with cognitive

dysfunction. Clearly, there are autoimmune manifestations, but my clinical experience has proven to me that, chronic, persistent infection is often underlying the process, as autoimmune markers often turn negative with antibiotic treatment.

The third part of the MSIDS model, inflammation, is a key component that underlies many chronic disease states, and helps us to understand persistent symptoms in Lyme disease. During infection, there are molecules secreted called inflammatory cytokines, like tumor necrosis factor alpha, interleukin 1 (IL-1), interleukin 6 (IL-6) as well as interferon gamma. These molecules can cause fatigue, aches and pains (whether that is joint pain, muscle pain, and/or nerve pain), sleep and mood disorders, as well as cognitive difficulties. All of these symptoms can be caused by inflammatory cytokines. If you can lower the load of these inflammatory molecules, even if you don't get rid of every last infection, many of these patients will get better. How else can we reduce inflammation in our body?

There are other parts of the MSIDS model that directly impact inflammation, like GI dysfunction with dysbiosis (an imbalance of the intestinal bacteria), food allergies, mineral deficiencies, and sleep disorders. We see a lot of people with food sensitivities to wheat, sugar and dairy. Some of these patients are also gluten sensitive or have celiac disease, and once they balance their intestinal bacteria, eliminate yeast, and get off their sensitive foods, they feel better. I also see mineral deficiencies, with low levels of iodine, magnesium, and zinc in about 25 percent of the patients who come to see me. Zinc deficiency will cause inflammation. Finally, Lyme patients often suffer from resistant insomnia. Insomnia will cause inflammation, increasing interleukin 6 levels in the body. The end result of inflammation from these multiple sources can be mitochondrial dysfunction. The mitochondria are the parts of the cell responsible for energy production, so even if you treat the infections, heal the gut, get off the allergic foods, replace the minerals, and get patients to sleep, they may still complain of symptoms, since there was cellular damage. Treating for mitochondrial dysfunction with essential nutrients such as NT factors, CoQ-10, and acetyl-L-carnitine may help up to one-third of these individuals to improve their physical functioning.

Other essential points on the MSIDS map that are important to address are hormonal dysfunction with POTS/dysautonomia. I see a lot of hormonal problems involving the adrenals, thyroids, and sex hormones. The same inflammatory cytokines we have been discussing can affect the pituitary and the HP axis (hypothalamus-pituitary axis) subsequently lowering the adrenals, affecting the thyroid, or lowering testosterone in young men. If the hormones are affected, people will not feel better until the hormonal imbalances are properly addressed. POTS with dysautonomia also plays a huge role, as a significant percentage of our patients have POTS and physicians may not recognize it. If you're tired and dizzy with poor cognition, it may be because your blood pressure is too low and you can't adequately perfuse your brain. Performing sitting and standing blood pressures with pulse rates may help to identify POTS.

Infections are therefore affecting the underlying terrain of the body causing free radical oxidative damage to the cells, and causing imbalances in hormones and the autonomic nervous system. It's not sufficient to just treat the infections. We must repair the damage from the infections to get a person back into balance. It's the equivalent of going into a doctor's office with 16 nails in your foot, saying that you have foot pain. If the doctor doesn't find all of the nails and pull them out, you will never feel well. Lyme patients with a long list of symptoms may therefore seem overwhelming to health care providers, but using the MSIDS model will simplify a complex situation by breaking down the illness into component parts and getting to the source of the symptoms. I've discovered that over 90 percent of chronically

ill people will get a positive clinical response using the MSIDS map, if you simply take the time to break down the disease process into these 16 aspects.

***After you've diagnosed the patient, what's the first thing you treat? Which of the 16 nails do you pull first?***

During the history and physical, it's important to discuss the chief complaints in order to create a differential diagnosis, and focus testing and treatment on those symptoms. The Horowitz Lyme MSIDS Questionnaire is on page 34 in my book, and has a list of the most frequent symptoms seen with Lyme. This was formulated from a questionnaire that was developed by Dr. Burrascano years ago. We expanded the original questionnaire and weighted the answers, adding sections to evaluate the risk of Lyme and associated co-infections. The questionnaire was then validated by Drs. Phyllis Freeman and Maryalice Citera, researchers at SUNY New Paltz. We gave the questionnaire to over 500 patients, and it validated on three important statistical measures. Health care providers and patients can therefore use it with confidence as an initial screening tool to evaluate the risk of having a tick-borne disorder. This would be especially useful in the case of a patient who comes in with a medical illness such as chronic fatigue syndrome (CFS), fibromyalgia, an autoimmune disorder like RA or multiple sclerosis (MS), or a psychiatric illness like depression or anxiety. All of these illnesses can be caused by Lyme, which is known as the "great imitator". The questionnaire would reveal whether we are dealing with a multi-systemic illness, which is classic for Lyme disease. Then you add up the four sections of the questionnaire, and if their score is over 46, there's statistically a good chance that they suffer from Lyme disease.

The next step is to look at the questionnaire and focus on the most important symptoms. Migratory aches and pains are classic for active Lyme. Day sweats, night sweats, fevers, chills, and air hunger are suggestive of babesiosis, a parasitic infection. If you don't treat Babesia, many of these patients will not get better. I'll test for Babesia by doing a Babesia panel through IGeneX laboratories, looking at the titers for Babesia microti and Babesia duncani WA-1, with a PCR (DNA) and Babesia FISH test. I also might test for different Babesia species (microti and WA-1/duncani) through local labs, like Quest, Lab Corp and Bio reference laboratories.

If the patient complains of tingling, numbness and burning sensations (suggestive of neuropathy), I then would check for vitamin deficiencies (B12, folic acid), heavy metal toxicity (mercury, lead, arsenic), thyroid and hormonal disorders, immune deficiency, as well as checking for autoimmune markers (anti-ganglioside antibodies) against the nerves. These antibodies are seen in patients with autoimmune disorders with demyelination, and also in POTS/dysautonomia, implying the need for immune support, with treatment like IVIG (IV immunoglobulin therapy).

I therefore go through the questionnaire and the symptoms, one by one, and decide on the testing I need to do, focusing on co-infections, hormonal abnormalities, mineral deficiencies, food allergies or sensitivities, autoimmune overlaps, heavy metal burdens and toxins, detoxification problems, as well as mood disorders and sleep problems. I would then design a treatment model based on the history and test results. A common example is a patient complaining of feeling tired, dizzy, with palpitations, and concentration problems, with an exacerbation of these symptoms at three o'clock in the afternoon, soon after lunch. That pattern of symptoms is suggestive of reactive hypoglycemia. I might have them go for a five-hour glucose tolerance test to see if they are hypoglycemic, and/or tell them to try a hypoglycemic diet. If that symptom complex resolves, we know we have removed one nail. If it persists, we need to go back and expand the differential diagnosis.

Those same symptoms could be seen in Lyme with low adrenal function and/or POTS/dysautonomia. The patient might say that they have been under tremendous stress for a long period of time, leading to low adrenal function, and if changing positions from sitting to standing brings on symptoms, this is suggestive of POTS. Frequently, there are several overlapping factors causing the same symptoms, and they all need to be addressed for an individual to reach maximal improvement. For example, we are now finding that two-thirds of our patients with chronic persistent disease are showing up with mold toxins. Although the effect from mold may vary between individuals, it is clear that neurotoxins from external sources like mold, mercury, and lead, as well as internal bio toxins from *Borrelia* cause illness in a large number of individuals, making detoxification an essential part of the treatment plan.

When we give people a trial of glutathione in our medical office to help their bodies detoxify, about 70 percent of them tell us they improve. Their fatigue, muscle and joint pain is better and often their memory improves – just by pulling out some of these neurotoxins. We may also be affecting inflammatory cytokine levels. If you treat infections with antibiotics or herbs, but you don't adequately detoxify patients, the majority of people won't get better. The MSIDS model incorporates all of these factors, but you just have to be facile in looking at the model, doing the testing, and working it out piece by piece since each patient is different.

***Do patients feel overwhelmed at times with all these things they need to pay attention to?***

Yes, in the beginning it can be difficult, but a provider and/or nurse will go over the treatment regimen with the patient. We also encourage them to take notes at the end of a visit, so when they leave the office, they have written instructions. We also give them contact information - phone numbers and an email address - if they have questions afterwards.

Right now we're working on a computer application to try and streamline the MSIDS diagnostic and treatment process for patients and physicians. Patients will be able to fill out the Horowitz-MSIDS questionnaire online, health care providers will be able to input test results, and the app will suggest differential diagnoses and treatment regimens based on allergies, prior response to medications and herbs, and/or patient/physician preferences. The Lyme Navigator App should be available on phones and computers hopefully by next year. Apart from making my diagnostic and treatment model more widely accessible, it should help in difficult cases with a broad differential diagnosis, and allow multicenter studies to be performed on large patient populations, helping to further essential research.

We've also formed a 501(c)(3) organization known as the Lyme Navigator Foundation as an initial step to do research on Lyme and co-infections, and we are dialoging with Dr. Ying Zhang from Johns Hopkins University to do clinical studies on novel drug regimens for bacterial persisters to help find a cure for Lyme disease. The Lyme Navigator Foundation has multiple purposes. One is to help find the most effective diagnostics and treatment regimens for chronically ill people with Lyme-MSIDS. The Foundation's mission is also to expand to address other diseases such as chronic fatigue syndrome, fibromyalgia, autism, multiple sclerosis, Alzheimer's disease, cancer, and other chronic illnesses. Chronic disease in the United States accounts for 70 percent of the deaths and 75 percent of our health care costs, which is economically unsustainable. It has been predicted that chronic diseases will break the health care bank in the next 30

years. Therefore, we want to use the Lyme Navigator Foundation as a platform to apply the MSIDS model to these other chronic diseases to see if we can improve the quality of care of patients, treating underlying causes and not symptoms, while saving precious health care dollars.

The Lyme Navigator Foundation also will look at improving our present health prevention model. Chronic infections and toxins are linked to chronic diseases, and they are not regularly being accounted for. We'll look at the preventative aspect of diagnosing and treating MSIDS and see - like the Framingham study did over 40 years ago - whether we can prevent diseases like Alzheimer's and cancer by treating people for infections and detoxing them. The last mission of the Foundation is for indigent patients who don't have the financial resources to get properly treated. We are looking to raise funds to help those who cannot afford comprehensive care. It's a big project, but it's a very exciting one. We have a team working on this project right now, and it should be launched later this year or next year.

***I was going to ask you what can be done for all the poor people who are at risk – the landscape workers without insurance – they must be at high risk for Lyme but can't afford treatment.***

Yes, they are at high risk. The advantage of an app is that anyone with a smart phone or access to a computer can use it. Local doctors will have access to the model of care that I use for patients in my office, but at a fraction of the cost. Patients will be able to use their own health care providers, and the app will guide them. My publisher has asked me to do another book, a simplified version. It's a question of finding the time to do this, as well as a book that will integrate the app. At the end of my book: *Why Can't I Get Better?*, there is an addendum for healthcare providers on testing and treatment protocols. I often speak to physicians from other states and other countries, and I try to be a resource for them as much as I can. I do think a simplified version of the book and the app will help people – that's why I wrote the book – to share my knowledge base and help physicians improve their patients' health.

***Of course, first you have to convince your doctor that chronic tick-borne disease exists. Let me ask you something about treatment. Can you treat someone with tick-borne disease without antibiotics?***

Yes, of course you can. I just want to address your last statement about convincing the doctors that chronic Lyme disease exists. In the back of my book there are hundreds of scientific references from the peer reviewed scientific literature on Lyme disease, co-infections, and different aspects of the MSIDS model. There are references in that section on the unreliability of Lyme tests and how *Borrelia* persists. If a doctor or health care provider takes the time to go through these references, they will see that there is abundant scientific evidence. Since the book was published, there are several new references on persistence from researchers from the NIH, using a technique called xenodiagnosis. This showed persistence in mice and in patients with post-treatment Lyme disease (PTLD).

Regarding other treatments, you can treat people with natural protocols and not just antibiotics; these are described in detail in my book. Chronically ill patients usually need some antibiotics to effectively lower the load of organisms in the body, but that doesn't mean you need to stay on them long term. You can use herbal protocols, whether it be the Cowden protocol with samento-banderol, or the Buhner protocol, or the McCamish protocol, or the Byron White protocol, or the Zhang protocol with Chinese herbs. We use a lot of these herbs and find they are

helpful in about 70 percent of our patients. You can also use natural protocols to treat other points on the MSIDS map, such as balancing hormones, treating nutritional deficiencies, getting off allergic foods, or using herbs for sleep or anxiety. So the answer is yes, naturopathic doctors, chiropractors, Chinese medicine practitioners, homeopaths - many healthcare practitioners use protocols that can help patients, without antibiotics.

***If you have a patient who you suspect has gone undiagnosed for 20 years, can they be hopeful that either they can rid themselves of the organisms or they can get to the point of wellness where they can get out in the world again?***

There's definitely hope for people, as I've used the MSIDS model effectively in thousands of patients who have been sick for a long time. The majority of people who come to see me have seen ten to 20 doctors before they come to my medical practice. I do help the majority of these people get better; some are a little bit better, some are moderately better, some are significantly better, and some become symptom free. The most important point in helping these patients is to look for points on the MSIDS model that have not been previously diagnosed and/or adequately treated, such as chronic infections – especially parasites like Babesia - along with POTS/dysautonomia, food sensitivities and allergies, and an inability to sleep. Many people will not get better unless you address these points. Once you address these multiple factors on the MSIDS map, the majority of people do improve. I've had people who were confined to wheelchairs for years who became able to walk again. People who were disabled and unable to work got back to their job. There's definitely hope for people, and if the Lyme bill gets passed, we will get needed research funds to speed up progress. Most importantly, the NIH, the CDC, and both the IDSA and ILADS physicians must work together to find a solution for this devastating epidemic. We must put politics aside and work for the benefit of others.

***So, even though the CDC says 300,000 cases, you said at the beginning of the interview it was one to two million?***

Here's the reason I say the numbers are much higher. When you look carefully at the CDC study by Hook in 2012, he reported that 0.9% of individuals in 2012 reported having ever been diagnosed with Lyme disease, and 0.3% of respondents were diagnosed in the last year. The American population is over 300 million and 0.3 percent of 300 million is over 900,000 people. They also based their numbers on the two-tiered testing protocol of an ELISA followed by a Western blot, which is known to miss approximately half of the people infected. Then the data did not include states like New York, which are hyper-endemic for Lyme disease. Nor did the data include laboratories like IGeneX, which picks up a significant number of individuals missed by other commercial laboratories. It didn't include individuals with chronic fatigue syndrome, fibromyalgia, and multiple sclerosis, who may have been misdiagnosed. When you aggregate that data, the numbers indicate that 1 to 2 million people are coming down with this disease in the United States on an annual basis.

***It's really incredible. It's an epidemic.***

It's a worldwide epidemic. When I travel through Europe, I hear the same stories, that millions of people are infected. When I go to Strasbourg, France to lecture, which is right across from Germany and the Black Forest, they have over a million cases of Lyme disease in that region alone. Several years ago I went to China and met with their CDC to help them with Lyme and Babesia, and they told me privately that 6 percent of the Chinese population had Lyme. So if there are 1.4

billion people in China, about 300 million people in China have been affected. This is a world-wide epidemic, and that's not even accounting for the other *Borrelia* species, like *Borrelia miyamotoi*, the new relapsing fever spirochete, which is not found by the standard two-tier testing and which is rapidly spreading. Think about all the people who have Lyme-like syndromes that might be caused by other *Borrelia* species. We are in the middle of an epidemic of borreliosis. We need to take this very seriously because it can be passed from mother to child, and now tick-borne infections are in the blood supply. This is causing major disability for millions of people, and future generations will also be affected.

***Just to be clear, are you saying that *Borrelia* is passed through the blood supply?***

Not all species. We know that the blood supply can be contaminated with relapsing fever *Borrelia*, as well as with *Babesia*, *Anaplasma* and *Bartonella* species. This was recently published in the medical literature. We don't yet know about Lyme; it's not clear. We do know *Borrelia* can be transmitted from mother to child; I've seen this happen. We've seen fetal death in women when they haven't been properly treated, and this is reported in the medical literature, so this is a problem for women wanting to get pregnant who have symptoms with negative testing. Children are also at risk when they play on lawns in endemic areas and get Lyme disease and then develop neuropsychological problems. This year there was also an article by Dr. Stricker on possible sexual transmission. We don't know the true risk of sexual transmission, but *Borrelia* has been found in sperm and vaginal secretions. There are a lot of unknowns at this point. Multiple routes of transmission combined with increasing numbers of ticks and persistent illness puts our society at great risk.

***What is the role of mind-body techniques and spirituality in healing tick-borne disease?***

Mind-body techniques and spirituality can be used as a tool to help heal patients with chronic disease. In the last chapter of my book I discuss some of the scientific studies on meditation. There's a lot of evidence that integrating meditation into a healing process can be helpful. Earlier on, we talked about how some inflammatory cytokines are causing people to remain ill with fatigue, joint pain, muscle pain, sleep disorders, memory problems, and psychiatric issues like anxiety and depression. With meditation, you can lower inflammatory cytokines. Even some of the older studies on transcendental meditation from Herbert Benson at Harvard Medical School show a positive effect on the electroencephalogram (EEG), adrenal function, respiratory function, and galvanic skin resistance. As far as spirituality and the mind-body-spirit connection, I do believe people should connect with their spirituality. It can give them hope. It can give them strength during their illness. I have seen that religious and spiritual beliefs can be a great source of support during illness. When someone is suffering so much, it is helpful to have a very strong spiritual support system.

***Have you found that there are particular alternative treatments that are useful? You mentioned herbs. Is there anything else? Far-infrared (FIR) saunas or rifting or hyperbaric oxygen?***

The most useful, number one treatment is detoxification. Detoxification is important for the vast majority of our patients. That can be done through sweating out toxins through FIR saunas, removing them with glutathione, which makes toxins water soluble so they can be properly eliminated, or by supporting other detox pathways like methylation – some individuals don't methylate properly. It is useful to support multiple detoxification pathways simultaneously, by helping to

excrete toxins through the skin, liver, kidneys and colon. Glutathione is an essential part of most detoxification regimens, combined with saunas, as this can help remove heavy metals and mold toxins.

Regarding hyperbaric oxygen (HBOT), it can be useful for certain patients, but it is not curative, and not all insurance will cover it. You also have to be careful with HBOT in patients with active babesiosis, because too much oxygen may reactivate their infections. As far as other alternative regimens, I think they need to be scientifically studied. Anecdotally, I've heard of people who have gotten better from ozone, from hydrogen peroxide, from vitamin C therapies. I hope that the Lyme Navigator Foundation, working with groups like the Office of Alternative Medicine (OAM), will be able to do some of these scientific studies in the future. We need to look at these therapies, including raising body temperature with heat, because spirochetes don't survive well in the body with temperatures over 104 degrees (Fahrenheit), according to prior published literature. We need to look at novel ways to eliminate the load of pathogenic organisms and not rely on antibiotics, knowing that so many people are getting sick, and there are concerns about superbugs and antibiotic resistance. Personally, I have never seen antibiotic resistance in my practice because I combine antibiotics. If we had more funds for tick-borne research, we could be looking at alternative therapies and finding out which of them are scientifically valid and safe and effective for patients.

***Can you ever be cured of tick-borne disease or is it a case of bringing the levels of these organisms down?***

I don't usually talk about a cure because patients who have had this disease for many years have difficulty eradicating every last *Borrelia* organism (and parasites like *Babesia*). However, I don't feel it's necessary to eliminate every last organism. We live with many different bacteria and parasites. We need however to get the immune system to work properly and find a homeostatic balance with these organisms. For example, if the microbiome of the gut is thrown off, we may have a problem with cytokines and our immune system. I use combinations of different probiotics with billions of healthy bacteria to make sure we're getting good probiotics into our gastrointestinal system, so people don't get an overgrowth of yeast and *Candida*. The microbiome is important. By manipulating the microbiome you can reverse metabolic syndrome and diabetes, you can lose weight, change cytokine levels and inflammation, and recent studies even point to changes in the functioning of autistic populations. So, you don't really need to get rid of every last *Borrelia*, but you do need to address any significant abnormalities on the MSIDS map contributing to illness. Lowering the load of pathogenic organisms, addressing immune dysfunction, getting the hormones, autonomic nervous system and detoxification pathways to work correctly, avoiding food allergens, getting rid of *Candida*, getting people to sleep better and having emotional balance are some of the key ingredients to better health. Once all the significant points on the MSIDS map are properly addressed, the majority of people get better.

***Is there anything new in the scientific research right now?***

There are a rising number of co-infections that are problematic. Other *Borrelia* species, like *Borrelia miyamotoi*, are emerging and are in 10-20 % of the ticks in the northeast. I have found *Borrelia miyamotoi* by PCR in one of my patients who came to see me with a psychosis, who had been treated with antibiotics for five months by another physician. The *Borrelia* still persisted in the body. We need to look very carefully for these new, *Borrelia* species, as well as *Babesia* species like WA-1/*duncani*, and some of the new emerging viral infections, like the Heartland, Bourbon, and Powassan viruses; these viruses can be deadly.

Research just published through Harvard and University of California at Davis is also now showing links with autism and environmental toxins. We need a paradigm shift in the chronic disease model where chronic infections and toxins are seen as underlying etiologies for diseases like chronic Lyme, Alzheimer's, autism, and cancer. There is also exciting new research in stem cells as well as new therapies based on manipulating the microbiome of the gut – these may help people who are ill from Lyme/MSIDS. Finally, research from Johns Hopkins is looking at novel drug combinations for *Borrelia* persisters. All of this cutting edge research gives hope to chronically ill patients.

***We didn't talk about IVIG. Do you treat with IVIG and do you think that's an important component to treatment?***

Yes, absolutely. There are a group of patients who need IVIG. They have Chronic Variable Immune Deficiency (CVID) or they suffer from resistant neuropathies or an autoimmune encephalopathy. Some of these people who have Lyme and associated co-infections with low immunoglobulin levels will not get better until they receive IVIG. Some people with POTS with dysautonomia, with CVID, and with autoimmune manifestations can also find IVIG to be very useful. We screen people at the initial visit for immunoglobulin and sub-class deficiencies and we have found that there is definitely a subset of these patients with autoimmune markers who are immune deficient who will get better with IVIG. It is not a panacea; it does not work in all patients, but there is a subset of patients for whom it is useful, and an important part of our therapeutics to help chronically ill patients get better.

***You have your work cut out for you. Did I miss anything? Is there something else you'd like to say?***

I think you've covered the majority of it: It's a spreading epidemic, and the numbers are rising. Lyme-MSIDS is imitating diseases like CFS, fibromyalgia, MS, autoimmune and psychiatric diseases, and we discussed the new co-infections and the importance of the MSIDS model in discovering the multifactorial etiologies causing chronic symptoms.

When I moved from Bayside, Queens, I didn't know that I had moved right into the heart of one of the largest Lyme-endemic areas in the U.S. You never know where life will take you, but the fact that I've been able to serve in a way that I hope has benefited people and will benefit humanity later on, feels like it has been a blessing. I've been given an opportunity to help our world in ways that I don't think otherwise would have happened. I'm grateful for the opportunity to help solve a worldwide problem.

*Hear Dr. Horowitz talk about these topics and more at our May 12 event at Western CT State University. [Click here for details.](#)*

***Dr. Horowitz's website: [www.cangetbetter.com](http://www.cangetbetter.com)***

**Read what all the experts had to say....**

- [The Lyme Diet: Dr. Nicola McFadzean](#)  
Editor Janet Jemmott spoke with Nicola McFadzean, N.D., about how food choices can empower Lyme patients and support their journey back to health.
- [Straight Talk With Pediatrician Dr. Charles Ray Jones](#)  
Janet Jemmott interviews veteran Lyme disease Dr. Charles Ray Jones, introduced in our July, 2014 newsletter

- [When Lyme Hits School-aged Kids: Interview with Sandy Berenbaum, LCSW, BCD](#)

Sandy Berenbaum discusses the challenges that kids with Lyme Disease face in an interview with Janet Jemmott in our March, 2014 newsletter

- [Lyme Disease and the Brain with Psychiatrist Dr. Robert Bransfield](#)

Dr. Bransfield discusses the impact Lyme disease can have on mental health with Janet Jemmott in our January, 2014 newsletter

- [Dr. Steven Phillips Resumes the Fight Against Lyme Disease](#)

An in-depth interview of Dr. Phillips by Janet Jemmott, featured in our November, 2013 newsletter

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