Lyme disease, caused by Borrelia Burgdoferi is the fastest growing epidemic in the world. In US alone, an estimated 18 million people are stricken with this chronic infection and most are unaware of its presence in their system. Majority of the chronically ill have Borrelia Burgdoferi (Bb) infection as the main contributing factor in their disease process. People with fibromyalgia, MS, chronic fatigue syndrome, scleroderma, IBS, alzheimer’s disease, bell’s palsy, rheumatoid arthritis, lupus, parkinson’s disease, depression, tinnitus, vertigo, sciatica, periodontal disease to name a few are actually misdiagnosed. These conditions often have Bb as their causative agent.

Children suffering from autism and autism related spectrum disorders are often found to have lyme disease or chronic borreliosis. Approximately, 30% of autistic children have positive laboratory tests for chronic borreliosis. Autism is now regarded as being reversible and curable because once the Bb infection is treated, the symptoms of autism resolve dramatically, sometimes within a few days.

A recent epidemiological study has demonstrated states and areas in US with highly reported Lyme disease correlate directly to the areas and states with high occurrence of Autism.

In a recent informal study by the American Lyme Disease Alliance, 28 of 31 patients initially diagnosed with Chronic Fatigue Syndrome, were found to have positive tests for lyme disease. Borrelia Burgdoferi has been directly found in the lesions of multiple sclerosis patients, as well as those with Alzheimer’s disease. Chronic arthritis and systemic scleroderma have also been directly linked with Bb infection.

Lyme disease is a silent killer. Over a lifespan, Bb causes a variety of progressively worsening signs and symptoms that gradually lead to disability and death. As a society plagued with the lyme epidemic, it is time
to address and eradicate this Bb infection if the growing number of chronic diseases is too be eliminated.

**How does Bb cause disease?**

In 1974, the first case of lyme disease was detected in the New England town of Lyme in Connecticut. In 1975, Dr. Allen Steere was the first to study lyme disease, following a mysterious outbreak of juvenile rheumatoid arthritis in that town. However, it was not until 1982, that the agent responsible for Lyme disease was discovered by Willy Burgdorfer.

Dr. Burgdorfer discovered Bb to be a spirochete bacteria similar to syphilis. He isolated spirochetes belonging to the genus Borrelia from the mid-guts of ticks infecting deer, other wild animals, and dogs. Spirochetes are spiral-shaped bacteria of very early origin in the evolutionary scheme.

Bb produces a toxin similar to Clostridium botulinum which is responsible for food poisoning and affects the nervous system causing a temporary paralysis of the peripheral nervous system. The Bb toxin belongs to a family of toxic proteins known as “zinc endoproteinases” or “metalloproteases” which include the toxins from tetanus and clostridium botulinum.

The toxin from Bb acts by diminishing the release and the availability of the neurotransmitter, acetylcholine. Acetylcholine is a simple organic compound which is biosynthesized and is required in the transmission and action of nerves. Acetylcholine is responsible for muscle contraction in skeletal muscle, for the calming of smooth muscle found in the heart, intestines, uterus, and many other parts of the body. Because acetylcholine is found in all the nerves innervating all muscles, the Bb toxin can affect any and all body systems through the inactivation of acetylcholine.

**How is Bb transmitted?**

Lyme disease/ chronic borreliosis is the most prevalent tic-born disease in US. 22% of all stinging flies and mosquitoes are carriers of Bb. More recently, spiders, fleas, lice, and many stinging insects have been recognized to be carriers of Bb. Most people who do have lyme disease were stung by a Bb carrying insect at some point. Bb can also be transmitted sexually, in utero or during breastfeeding. Bb has been found in the breast milk of mothers with lyme disease. There is also some
evidence that Bb may be transmitted during blood transfusions because it bypasses majority of the laboratory tests and goes undetected during screening. In 1990, a study by the Centers for Disease Control (CDC) in Atlanta, Georgia stated that the data demonstrates that *Bb* can survive the blood processing procedures normally applied to transfused blood in the USA. The transmission of Bb through ticks and stinging insects, cattle are affected and thereby dairy products.

**How does Bb cause disease?**

Bb has the unique ability to burrow through and hide in between and inside cells especially the cells of the immune system. It can bind to B-lymphocytes, natural killer cells, affecting both humoral and cellular immunity. Because it binds to white blood cells, Bb causes a strong suppression of the immune system. Bb enters the nervous system and reduces acetylcholine production and function. It depletes magnesium levels thereby causing muscle fatigue, spasm and chronic pain. Bb, being a flagellate spirochete, has the ability to constantly change, mutate, and produce new strains. Currently, over 300 strains of Bb have been identified.

**What are some signs and symptoms of Lyme disease?**

Lyme disease can be dormant for many years and then without warning, suddenly symptoms may appear. Often, the symptoms are activated after an injury, trauma, surgery, vaccination or dental amalgam treatment.

Three stages of lyme disease may be identified. In the first stage after the exposure to Bb, within the first 7-10 days approximately less than 10% of patients affected with Bb develop a rash with a central clearing known as the “target” lesion. Patients may only experience flu-like symptoms including low-grade fever, headache, and generalized muscle aches with or without the rash. The rash and flu symptoms resolve within 3 to 4 weeks. There may be recurrent multiple rashes thereafter. The second stage usually involves joint pain especially of the larger joints, knees most commonly. The joint pain resolves within 3 to 4 years with or without treatment. The final stage involves the progression to the neurological system including symptoms of depression, cognitive deficits, mood and sleep disturbances, tingling, Bell’s palsy, and sometimes more acutely, meningitis or encephalitis. Other symptoms such as severe fatigue, tremors, anxiety, swollen glands, tinnitus, IBS, abdominal pain, menstrual
irregularity, heart palpitations, chest pain, weight changes, sore throat, stabbing/burning pain, OCD, brain fog, memory loss, poor coordination, slurred speech, and poor concentration may be a manifestation of Bb infection.

The severity of lyme disease varies and depends upon the total toxic load of the individual. Heavy metal toxicity, chemical toxicity, hormonal imbalances, emotional stressors and the presence of co-infections such as Babesia microti, Mycoplasma pneumoniae, Chlamydia pneumoniae, Bartonella henselae, Rickettsiae Rickettsi, fungi such as candida, viral infections such as herpes and parasites such as tapeworm, roundworms determine the milieu, the toxic load and the severity of the manifestation of lyme disease. Thus, chronic acid reflux, colitis, chronic sciatic or TMJ pain, thyroid disease, anxiety or OCD may be a sign of lyme disease.

**How is it Diagnosed?**

The problem is that there is no single test that is accurate for diagnosing lyme disease. Because of the approximate 300 different strains of Bb identified recently and because Bb has a tendency to mutate and to change into different structural forms within and outside of the cell, specific and sensitive laboratory tests have not been fully developed.

Lyme disease or Chronic Borreliosis is a clinical diagnosis made by a lyme-literate physician. Because of its complexity, the signs and symptoms of lyme disease are usually recognized by lyme-literate physicians only and often missed by rheumatologists and other specialists. Laboratory tests if positive only confirm the diagnosis. Negative tests do not disconfirm the diagnosis. A lyme-literate doctor recognizes that diagnosis must include the assessment and present of co-infections since Bb rarely occurs in isolation but rather in a complex of various infections.

Currently, Igenex Laboratory provides the most sensitive and specific Western Blot testing for the presence of Borreliosis and its co-infections.

Some other laboratory test markers that may be an indication of the presence of Borreliosis include:
- Abnormal cholesterol (high LDL)
- Borderline low WBC
- Normal thyroid tests but BBT low and respond to T3
High cortisol, low DHEA or adrenal failure (low cortisol, low DHEA)
Low testosterone, and low DHEA
Decrease urine concentration
High levels of Vitamin D 1, 25 OH compared to Vitamin D 25 OH

**Treatment options:**

Antibiotic therapy is very effective in treating lyme disease if the infection is in its initial stages. Once the infection enters the second stage of chronic disease however, antibiotic therapy is usually not as effective. Many patients suffering from chronic Borreliosis must spend months up to years of treatment on antibiotics for symptomatic relief.

In order to eradicate Bb, assessment and treatment of imbalanced hormones, heavy metal toxicity, co-infections, chemical toxicity, psycho-emotional stressors, metabolic imbalances, food allergies and sensitivities as well as nutritional deficiencies is vital to the success of the treatment of Chronic Borreliosis.

A multi-dimensional holistic treatment plan utilizing diet, lifestyle, appropriate detox of metals, chemicals, and liver toxins along with indicated anti-microbial herbal therapy, homeopathy, hyperbaric or oxygen therapy and bio-energetic medicine such as Ondamed can be extremely effective in eradicating the signs, symptoms, laboratory markers and the disease process of chronic lyme/borreliosis. Many patients with chronic fatigue, arthritis, autism, MS, depression, OCD and other conditions find a resolution of their symptoms and reversal of their disease process once lyme disease is treated from a holistic natural medicine perspective.