

Lyme Protocol

It can be intimidating to work with the complexity and multisystemic nature of Lyme disease. Diagnosis and management of these patients can be challenging for practitioners. However, there is a great need for informed, compassionate caregivers in this patient population, as they are often maligned by conventional medicine, and may arrive at your office desperate for support. With some well-applied therapeutics, these patients experience improvement and restored hope.

Lyme defines the infection caused by *Borrelia* species bacteria, transmitted by parasitic insect vectors. According to the CDC, it is the most common vector-borne disease in the United States with approximately 30,000 new cases reported each year,¹ although many Integrative Practitioners believe the number is significantly higher.

Transmission

The transmission of *Borrelia* organisms occurs with a tick attachment between 10 minutes and 72 hours. Ultimately, transmission rate depends on many factors: the type of tick (hard vs. soft), species, location of spirochetes in the tick, if the tick is partially fed (most are), and the health of the host's immune system.²

Symptoms

A "bulls-eye" rash is considered diagnostic for *Borrelia* infection but is not present in every case. The rash is only seen in approximately one-third of people who contract Lyme.² Because of its ability to infect multiple body systems, other prevalent symptoms include fatigue, headaches, fever, joint pain, arrhythmia, and neuropathy, including paresthesias.

If acute Borreliosis is not resolved, Lyme can become persistent. In its persistent stage, Lyme is known as the "Great Imitator" and can easily be confused with other illnesses and infections. Its symptoms often overlap with common chronic conditions such as myalgic encephalomyelitis (AKA chronic fatigue syndrome), fibromyalgia, inflammatory arthritic conditions, MS, and more.

Complications

Once Lyme becomes persistent, it is important to provide support to all body systems involved. Here, we will focus on the application of Botanicals and Binders. For in-depth information, please see [this article](#) series by Dr. Emily Hernandez, ND.

A thorough intake must include assessment of the following areas:

- Immune regulation
- Inflammatory balance
- Sleep disturbances
- Gut barrier function
- Integrity of the blood-brain barrier
- Neuroinflammation
- Cardiovascular integrity
- Autonomic nervous system

¹ www.cdc.gov/lyme/index.html



Possible Coinfections² and Opportunistic Organisms

Coinfections refer to pathogens transmitted simultaneously with *Borrelia*. Careful consideration should be given to addressing coinfections, as well as previously existing opportunistic infections. Additionally, opportunistic organisms already present in the host can rise as the immune system is challenged by new microorganisms. In fact, coinfections can become opportunistic infections and present as flares or persistent illnesses causing the chronic conditions discussed above.

This is one of many reasons the broad-spectrum activity of botanicals is extraordinarily useful as a primary clinical tool. Biocidin® provides the combination of immunomodulation, removal of harmful organisms, biofilm disruption, and support for healthy inflammatory response.*

Possible Lyme Coinfectious Organisms	Possible Opportunistic Organisms
<i>Anaplasma</i>	EBV
<i>Babesia</i>	CMV
<i>Bartonella</i>	HHV-6
<i>Chlamydia</i>	HSV-1, HSV-2
<i>Ehrlichia</i>	Fungal (Aspergillus, Candida)
<i>Rickettsia</i>	
<i>Mycoplasma</i>	

Biofilms

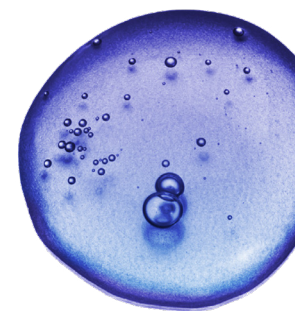
Addressing biofilms is often overlooked in clinical management of Lyme. Biofilms are communities of bacteria embedded in an extracellular matrix, making them resistant to eradication. They are responsible for most chronic and recurrent infections and contribute to toxic load and inflammatory burden. They can be found almost anywhere in the body.

Biofilms are a survival mechanism used to outmaneuver antimicrobials and antibiotics by *Borrelia* species, and coinfections. Research shows that Biocidin® has potent activity against biofilm communities, including *Borrelia* specifically.

See our [Biofilms Protocol Sheet](#) for more information.



²Buhner, Stephen Harrod. Healing Lyme: Natural Healing of Lyme Borreliosis and the Coinfections Chlamydia and Spotted Fever Rickettsiosis. 2nd ed., Raven Press, 2015, p.37.



Biocidin® *Borrelia* Research Summary

In vitro research evaluating the activity of Biocidin® and Biocidin® LSF on *Borrelia* species came to the following conclusions:

- Both Biocidin® (liquid and LSF) formulations are equally effective at inhibiting and eliminating all forms of *Borrelia* (97% cell death in 10 minutes).
- No apparent induction of pleomorphic or persister forms, unlike many antibiotics.³
- Biocidin® LSF demonstrated a 74% increased intracellular uptake over Biocidin® liquid (vital when managing intracellular pathogens).³
- Lyme biofilms were effectively eradicated.³
- Both Biocidin® (liquid and LSF) formulations disrupt the efflux system of bacteria – a mechanism of resistance.³
- High level of synergy with Biocidin® LSF and Ceftriaxone.³

Chronic Lyme is multifactorial, affecting every system of the body; thus, an integrative and systematic approach is the best way to successfully support recovery. Besides nutrient and botanical therapies, lifestyle changes should be addressed. For chronic patients, using a low-and-slow approach and implementing therapies strategically and simultaneously is the best way to achieve remission.

See our [Product Usage Guide](#) for more details on titration.

There is no one approach that will work for every person, so evaluating each individual's presentation, labs, history, and symptoms will give the best insight into where to begin and how to build a successful support strategy.

Lifestyle Recommendations

- Stress support. Deep breathing, simplifying, and learning to say “no” are all ways to help balance cortisol and mitigate stress-induced inflammation.
- Include oral health evaluation and treatment as part of a strategy for whole-body microbial balance.

See our [Oral Health Care Guide](#) for more details.

- Evaluate lifestyle habits. Smoking, alcohol, and sugar consumption are all pro-inflammatory and cause neuroinflammation.
- Sleep disturbances. Maintain a healthy circadian rhythm to allow the immune response to work optimally against Lyme and other coinfections.

³ https://www.researchgate.net/publication/330317612_Effective_killing_of_Borrelia_burgdorferi_in_vitro_with_novel_herbal_compounds

Therapeutic Plan Suggestions

See our [Product Usage Guide](#) for serving sizes.

Product	Key Activities*
	See Product Sheets for ingredient-specific actions
Biocidin® LSF	Biofilm Disruptor, Healthy Elimination, Microbial Balance
Biocidin® Liquid	Biofilm Disruptor, Healthy Elimination, Microbial Balance
G.I. Detox™ +	Absorbent, Immunomodulatory, Healthy Inflammatory Response
Olivirex®	Virome Balance, Hepatoprotective, Immunomodulatory, Microbial Balance
Biotonic™	Adaptogenic, Antioxidant, Hepatoprotective, Healthy Inflammatory Response
Proflora™ 4R	Healthy Elimination, Healthy Gastrointestinal Flora, Microbial Balance

Additional Therapeutics/Supplements

Detoxification	Liposomal glutathione, Smilax glabra, Milk thistle, Burdock, Schisandra, Dandelion, Taurine
Inflammation	Curcumin, Boswellia, Red Sage, Chinese Skullcap, Proteolytic enzymes
Immune System	Cordyceps, Astragalus, Colostrum, Immunoglobulins, Reishi
Antimicrobials	Teasel Root, Cat's Claw, Japanese Knotweed, Andrographis

*Single botanicals offering targeted therapeutics may be used in addition to Biocidin® products.
For more information, please contact our clinical team at clinical@biocidin.com or 831-786-9711 ext. 3.*

Questions?

For clinical questions, email clinical@biocidin.com
or call 800-775-4140, x3.

*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

