



Lyme Disease & Mental Health

What You Should Know

Sources: Centers for Disease Control and Prevention (CDC), Columbia University School of Psychiatry, *Journal of Neuroinflammation*, *American Journal of Psychiatry*, *Bipolar Disorder: Open Access*

An Overview of Neurological Lyme and Lyme Neuroborreliosis (LNB)

Each year, approximately 476,000 people contract Lyme disease from the bite of an infected tick, according to the Centers for Disease Control and Prevention (CDC). Lyme disease is the most common vector-borne infectious disease in the United States.

Despite the increasing prevalence of Lyme and other tick-borne diseases throughout Illinois and the country, many health care providers are unaware of the changes the illness can have on multiple systems of the body. **The central nervous system (CNS) is one such system that may be heavily impacted by Lyme disease, leading to a condition known as neurological Lyme or Lyme neuroborreliosis (LNB).**

“It is time to move beyond thinking of Lyme disease as a simple illness that only causes a rash,” says Brian Fallon, MD, MPH, a psychiatrist and researcher with the New York State Psychiatric Institute and Columbia University, in an interview with the Columbia University Department of Psychiatry. “In addition to the risk of severe cardiac, rheumatologic, and neurologic problems, **Lyme disease can cause severe mental health problems** as well.”

Lyme Disease, Mental Health, and Emerging Research

1. Prevalence of LNB

LNB may develop in up to 15% of untreated patients, according to one study in the *Journal of Neuroinflammation*. Researchers suspect that when *Borrelia burgdorferi*, the primary species of borrelia causing Lyme in the U.S., enters the CNS, it increases inflammation by way of pro-inflammatory chemicals, IL-6, IL-12, IL-18, and others. **Other studies suggest the prevalence of neurological Lyme in patients may be as high as 40%.**

2. Mental Disorders and LNB

Research in the *American Journal of Psychiatry* reports that **patients who received a hospital diagnosis of Lyme disease, including in-patient, out-patient, and emergency room visits, had a 28% higher rate of mental disorders**, and they were twice as likely to have attempted suicide after infection, compared to people without a Lyme diagnosis. Those with the tick-borne disease also had higher rates of affective disorders (depression, bipolar disorder) at 42%



and had a 75% higher rate of death by suicide than individuals without a Lyme diagnosis. Contracting Lyme more than once was also associated with higher rates of mental disorders, affective disorders, and suicide attempts.

3. Tick-Borne Illness and Children's Mental Health

A 2017 retrospective study examined the connection between tick-borne illness (TBI) and pediatric bipolar disorder (PBD) in 27 youths from a Northeastern psychiatric private practice. Testing was conducted for several tick-borne pathogens, including *Borrelia burgdorferi* (Lyme disease), babesia, bartonella, *Mycoplasma pneumoniae*, anaplasma, and ehrlichia.

The study findings indicate 89% of patients tested positive for exposure to one or more pathogens. Of the 27, 16 were found to have babesia, 11 had *Mycoplasma pneumoniae*, eight were positive for bartonella, and six had Lyme. Researchers suggest there may be a connection between Lyme, other tick-borne diseases, and children's mental health, especially in treatment-resistant cases.

Key Takeaway

The number of people who develop new-onset mental health issues after a Lyme disease diagnosis is unknown. However, in the interview with the Columbia University Department of Psychiatry, Michael Benros, MD, PhD, principal investigator, and psychiatric epidemiologist at the Research Centre for Mental Health in Copenhagen, Denmark, states, **“Treating clinicians and patients should be aware of an increased risk of mental health problems, particularly during the first year after a severe Lyme disease infection,** and if mental health issues arise, patients should seek treatment and guidance.”

Common Lyme Disease Symptoms:

The initial symptoms of Lyme disease and other tick-borne diseases may be general, flu-like in nature, and similar to other diseases, which may lead to the tick-borne disease being undiagnosed or misdiagnosed.

Symptoms include:

- Fatigue
- Fever
- Chills
- Headaches
- Cognitive impairments
- Muscle and joint pain
- Neck pain
- Facial paralysis (Bell's palsy)
- Flu-like feeling
- Bulls-eye rash (erythema migrans or EM rash). Note: the bulls-eye rash commonly associated with Lyme disease occurs in less than half of all Lyme infections.

Mental Health Lyme Disease Symptoms:

Some people will develop neurologic and psychiatric symptoms, such as:

- Anxiety
- Depression
- Suicidal thoughts
- Sleep disturbances
- Brain fog
- Rage
- Bipolar disorder
- Other mental health conditions

Early testing may not show an infection, as it could take up to six weeks to develop enough antibodies to be detected on a test. The longer a patient goes undiagnosed or untreated for Lyme, the higher the likelihood of developing mental health symptoms.

References

1. How Many People Get Lyme Disease? The Centers for Disease Control and Prevention website. www.cdc.gov/lyme/stats/human-cases.html
2. Lyme Disease Heightens Risk of Mental Health Disorders, Suicidality. Columbia University Department of Psychiatry website. <https://www.columbiapsychiatry.org/news/lyme-disease-heightens-risk-mental-disorders-suicidality>
3. Martinez AN, Ramesh G, Jacobs MB, Philipp MT. Antagonist of the neurokinin-1 receptor curbs neuroinflammation in ex vivo and in vitro models of Lyme neuroborreliosis. *J Neuroinflammation*. 2015 Dec 30;12:243. doi: 10.1186/s12974-015-0453-y
4. Fallon BA, Madsen T, Erlangsen A, Benros ME. Lyme Borreliosis and Associations With Mental Disorders and Suicidal Behavior: A Nationwide Danish Cohort Study. *Am J Psychiatry*. 2021 Oct 1;178(10):921-931. doi: 10.1176/appi.ajp.2021.20091347
5. Greenberg R. Infections and Childhood Psychiatric Disorders: Tick-Borne Illness and Bipolar Disorder in Youth. *Bipolar Disorder: Open Access*. 2017 Jan; 3. doi: 10.4172/2472-1077.1000113



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