# Lyme Disease and Mental Health: The Hidden Cause of Anxiety, Depression & Brain Fog Transcript

(Transcripts are generated by AI and may contain errors)

## Podcast Introduction and Episode Overview

If all we do is label you with depression and then the first line treatment in the book is to give you an antidepressant, well, if you have a tick-borne illness, this Lexapro is not going to treat the tick-borne illness, right?

It might even make it worse. And if Lexapro doesn't work, our second line treatment is a different antidepressant. And so there's really no like, hey, let's get to the root of the symptoms.

We're looking, in functional psychiatry, I'm looking at things as symptoms as opposed to just diagnoses. Hi, and welcome to the Lime Bites podcast, where we shine a light on the misunderstood science of Lyme and other vector borne diseases, as well as the truths that many still miss.

I'm Dr. Mariah Hinchy, naturopathic physician and fellow of the Medical Academy of Pediatric Special Needs. I specialize in treating chronic Lyme disease as well as other complex inflammatory conditions.

In this podcast, we break down what's working and what's not. We share the facts that most people miss, we challenge outdated thinking, and we give both patients and practitioners the tools to heal smarter.

So let's get into it and change the way we heal Lyme. Welcome back to Lime Bites, Rebuilding Immunity, Reversing Inflammation, and Redefining Recovery.

We've talked about neuropsychiatric symptoms of Lyme before, but it's one of those topics that can't be covered enough. The inflammation these infections trigger in the brain can alter mood, cognition, behavior, and even personality.

So once again, We're diving back in because understanding how infections affect the brain is essential to true recovery. Today, we're looking at it from a bit of a different perspective, that of a nurse practitioner who specializes in functional psychiatry.

My guest, Everest Goldstein, works at the intersection of mental health, chronic infection, and immune dysregulation.

## Everest's Lyme Journey and Functional Psychiatry Path

She helps patients identify when anxiety, depression, OCD, and cognitive symptoms aren't purely psychological but are instead driven by inflammation, infection, and chronic stress.

Together, we'll talk about how chronic illness impacts mental health, what neuroinflammation does to the brain function, and how Pants Pandas can show up in adults, as well as how to support mental wellness through a functional medical lens that honors both the mind and the body.

This is Lime Bytes. Let true healing begin. Welcome, Everest. Thanks so much for joining us. Yeah, I'm so excited to be here. Thanks for having me. Absolutely.

So tell our listeners, how did you end up as a functional psychiatrist nurse practitioner specializing in the treatment of vector-borne disease? Yeah, so kind of a personal story, honestly.

The way I even got into functional medicine was through my own journey with Lyme disease. So I was, it was actually as I was trying to go back to nursing and nurse practitioner school that I got super sick.

And I went, I'm from a family of healthcare providers. My dad's a doctor. So I was going from doctor to doctor, seeing all of these top specialists and no one could really figure out what was going on.

until I found a functional medicine provider who she doesn't necessarily specialize in vector-borne disease, but she's very familiar with it, treats it and definitely tests for it and stuff like that.

So she basically diagnosed me, treated me, brought me back my life. I feel like I owe her so much, but also showed me so much about the functional world.

At the same time, I've always been interested in the mental health side of things. I majored in psychology at Princeton. I was a teacher and did a lot with the special education population.

I knew that I wanted to work with that population in some capacity. As many of us know who work with or, um, you know, deal with vector-borne disease in one way or another, it does affect both the body and the mind.

And there's such a connection between the brain and the body that's not always recognized in conventional medicine. So basically all of those experiences came together and I just, um, being a psychiatric nurse practitioner and getting certified in functional medicine and being part of the Lyme Association here and everything, I just have really developed a passion for it and love working with that population.

So what do you see as the most common psychiatric symptoms in your patients with vector-borne diseases?

## Common Psychiatric Symptoms in Vector-Borne Illness

Yeah, I see. I mean, the interesting thing, and this is just kind of the case with vector-borne diseases, right, is it can show up in a lot of different ways.

But most commonly, I would say I see a lot of, one, anxiety, also that brain fog that almost presents as ADHD symptoms. And this is both peds and adults And then also like a lot of depression, low mood, particularly just dealing with a chronic illness, right?

Or even if it is an acute illness, it's pretty severe for a lot of people. And so it can be really scary. It can be really hopeless. It can be really lonely.

And that can kind of show up in that depression type presentation. And then I also work with peds, so pediatrics and kids. And, you know, with them, I've seen a lot of that panda's pans presentation where, you know, all of a sudden they, you know, their entire like mental way about them changes.

So they might be fine one day and the next day they maybe have a lot of OCD or a lot of anxiety or outbursts. And I see that present in that population that way.

Yeah, so important to roll out an infection if there's an abrupt change in any sort of brain function. You know, we say that over and over and over again.

And when it comes to chronic Lyme and other vector borne diseases, it's like a double whammy. It's like you have, just like you were talking about, it's like, you know, you've been sick for so long, you don't feel well, like that in and of itself is depressing and causes anxiety.

But then like on top of it, you actually have like literal brain on fire with all of the inflammation. And so, you know, a lot of you know, the brain function just doesn't work properly too.

So it's like such a double whammy. It is, it really is. And like you have, you know, the inflammation makes it even harder to cope with all of the symptoms and the feelings that you're feeling.

So I see that kind of show up in both ways. And as we know, like inflammation in the body can cross the blood

brain barrier and lead to inflammation in the brain.

Lyme and other vector borne diseases can also just directly cause inflammation in the brain and get to the brain in that way. So you really have, it's almost like, you know, the perfect storm of things coming together to make you feel pretty crappy.

Yeah. So can you explain like on a deeper level what's happening in the brain when you have this neuroinflammation and how it affects mood and cognition and behavior?

Are you ready to revolutionize your approach to diagnosing and healing complex chronic inflammatory illnesses in both adults and children?

## How Neuroinflammation Affects the Brain

The Lime Bites Symposium is your gateway to cutting-edge education, groundbreaking research, and innovative therapeutic solutions. Join us at Lime Bites Symposium.

at the Fort Lauderdale Marriott Pompano Beach Resort and Spa. Lion Bites is the premier functional medicine conference on complex, chronic, infection-driven inflammatory illnesses.

This year's meeting is jam-packed with leading industry experts discussing lung COVID, mycotoxin illness, PANS Pandas, as well as Lyme and other vector-borne diseases.

This conference will arm you with the knowledge, clinical pearls, and practical solutions that you can implement immediately into your practice Monday morning that will literally change your patient's lives and get them on their path to true healing.

So join us at Pompano Beach or virtually from anywhere. Register now at LymeBytes.com. That's L-Y-M-E-B-Y-T-E-S dot com. I'll kind of even take a step back and start with like just the process of neuroinflammation and you know how all of these things kind of play into each other.

So we would have like a lot of times we have a central nervous system immune activation right from a vector-borne disease or something like that. And then that releases a bunch of pro-inflammatory cytokines that are released throughout your body and your brain, and that alters when it goes to your brain.

It's altering neurotransmission and the ability for our neurons to properly talk to each other. It's also altering that synaptic plasticity and just our neuronal function, right?

So our brain is now not functioning correctly, our neurons aren't talking to each other correctly, it's really hard to even make new memories. A lot of people struggle with short-term memory partly because of that.

And then this like almost, I guess we can call neuroimmune signaling, can cause these symptoms of depression, anxiety, cognitive dysfunction, fatigue, you know, brain fog, all of these things.

Part of that too, beyond just the ability of the neurons to function correctly, is it is affecting our neurotransmitters like serotonin, dopamine, norepinephrine.

So our body's not able to produce those and use those as intended, right, as it should be doing it. So that's kind of what's happening in the brain. And then like I said, when you're having a also systemic immune response, one that's affecting your gut a lot of the time and a lot of your serotonin receptors, dopamine receptors, stuff like that are in your gut, but it's also causing more inflammation that's crossing that blood brain barrier and making the the problem even worse.

So it's kind of a whole cycle that continues. And then as you, you know, this inflammation kind of almost feeds on itself as well. And then, you know, it's because of these symptoms, a lot of people start to have traumatic

responses to them, which is also changing the way that our neurons are communicating and talking to each other.

And it just cycles in that way. So and then on top of that when you have the stress of a chronic infection and the stress of all of the gas lighting and treatment and everything else, like talk to us about how that feeds into that cycle too.

## Stress, Cortisol, and Nervous System Dysregulation

Yeah, so I mean, this is such a, a lot of times this is a situation where there's such an acute stress response, right? And as we know, when our body is under stress or under a threat, it produces more cortisol, which is that stress hormone.

And when we are in a high cortisol state for too long, that starts to affect. the immune system too. It starts to activate the immune system. It shuts down other processes in our bodies.

Maybe we don't produce hormones as well. Our thyroid doesn't work as well. So many other things are happening that can further cause dysregulation in how we feel.

So we have this immune cortisol dysregulation that's happening and that affects like T cells. It affects different antibodies. You know, it's causing a cytokine storm a lot of the time.

So basically, all in all, like the chronic psychosocial stress that's happening is worsening our ability to recover. It's, you know, worsening our ability to respond to treatments.

And a lot of times when we're stuck in that sympathetic fight or flight state, it's really a big block to healing physically. So unless we address that, a lot of the time first, people are going to be stuck and they're not really able to like move to the next phase of treatment a lot of the time.

So how do you help your patients to work through that and to get unstuck? Yeah. So, I mean, I really try to take a very functional approach to this, right?

So, you know, the first thing that I'm always doing is a big comprehensive assessment to see like, what's going on? What's been your exposure? How long has this been happening?

And how is it presenting, you know, for you specifically? Because the way that I'm going to address somebody who's having panic attacks daily because of this might be different than somebody who's just like, I can't focus at all, or I'm just feeling really down.

I can't get out of bed. But all in all, we're always doing immune system support, plus the cortisol parasympathetic sympathetic nervous system regulation.

One of my favorite things to do is brain retraining. So there's a bunch of really great programs out there that people can do that are self-paced. Things like neurofeedback and stuff can also be really helpful.

There are some pretty cool technologies. for certain people that can be helpful like a TMS type situation. But I would say my go-to is probably the brain retraining and then also like working on activating the vagus nerve, right?

And how do we, the vagus nerve is something that helps us switch from that sympathetic fight or flight state to that parasympathetic rest or digest state.

## Functional Strategies to Calm the Nervous System

So we need to retrain our body to feel safe and that's a lot more involved than some people think of just like telling you you feel safe or, you know, therapy can be a really great tool.

But a lot of times we need more than that. We need to physically train our body that, hey, we're in a safe place and it's okay for us to start to heal.

So tell me like your top two favorite brain retraining programs and then tell us your top two favorite vagus nerve tonifying, whether it's a gadget or whether it's like a technique.

Okay, yes. So brain retraining, we'll start there. I really love Primal Trust is one of my top ones. I also love the Gupta program and DRNS. So any of those I don't think you can go wrong with.

Now, the The hardest part about that are those programs that I find with some of my clients who are really struggling is that it does involve time and energy, right?

So the barrier to starting them sometimes is people are like, I'm so sick, I don't have the energy or I don't have the time or this is too much for me.

So then we kind of take a step back like work on gentler things where I really love like starting with some vagus nerve stuff even some mindfulness and then getting to those programs because they can be such game changers and vector borne disease and mold which often goes hand in hand so many things um and then with vagus nerve I I actually have been using it every single morning before I even look at my phone which has just been a game changer in my life but I have the pulsetto which is like essentially a little headband type device that goes around your neck and it sends like vibrations into your vagus, vagus nerve essentially.

Uh, and it, I mean, when you put it on, you can feel it kind of just calming your nervous system. It's really awesome. I love that one as well as like the true Vega because they both go on your neck.

Now there's some really like awesome other ones that help reset your. you know, or help work on your vagus nerve, but they might go around your wrist or your ankle.

And I just find the ones around your neck as being the most effective. Um, and then my favorite, you know, if somebody can't afford a device, they're not that expensive, but you know, it's not, not everybody's, you know, ability to have one.

So if you don't have one, other things that you can do on a daily basis that can be helpful, as long as you're consistent, um, are things like gargling water.

So if you can gargle water for, you know, 10 to 30 seconds a couple of times a day or humming. You know, when you're humming, you feel that vibration that can be really helpful.

I tell people, you know, if you like to sing, like belt it out in the shower or the car. So there's some funny ones there. Activating the gag reflex can do it as well, but that one, you know, makes people out.

Yeah. So, and then, you know, other things will activate it, even like hot-cold therapy. But again, with really, really sick patients, I'm a little bit more cautious about that because it can be too much on the nervous system.

Yeah. You know, and a good thing too is like for patients because it's like these reminders, right? So it's like, okay, next time you're brushing your teeth, right, like you can kind of like gargle with the water after you've rinsed and gag yourself with your toothbrush.

Exactly. Yeah. Totally. And like, I've actually had clients in there, like, you know, my, my husband or my partner or whoever, like, has seen me do this and they think I'm absolutely insane.

But when you're consistent with it, it really does make a difference. Yeah. So I've seen the pulsato so many times and I'm one of those people where it's like, you know, if I'm going to recommend anything to a patient, I want to have already tried it first.

You know, I joke and say that's why I had Lyme and all these other vector borne diseases so I could like, you know, figure out what it was like to treat it on myself.

But you really like that one because I've almost ordered it and then I never did. And I've yet to meet someone who actually had it. Are you suffering from Lyme disease or another complex chronic illness and aren't sure who to trust when it comes to herbal supplements?

Hi, I'm Dr. Mariah Hinchey, founder of Lyme Core Botanicals. As a naturopathic physician specializing in complex chronic infection-driven illnesses like Lyme disease, I needed herbal medicine I could truly trust.

That's why I formulated Lyme Core Botanicals.

## PANS and PANDAS in Children and Adults

where our herbal tinctures are handcrafted in small batches right here in Connecticut. We use the whole herb, never isolates, to preserve the full spectrum of medicinal compounds.

Every single step from sourcing to extraction is done with precision to ensure maximum purity, potency, and consistency. These are the same herbal formulas I used to heal myself and have used for years to help my patients and family members heal, too.

And now I'm making them available to practitioners and patients everywhere. Lyme Core Botanicals, herbal medicine you can trust from a doctor who lives this work.

Learn more at Lyme Core Botanicals. That's L-Y-M-E-C-O-R-E dot com. Yes. So I, you know, it's funny, I actually got it at the same time as a couple of my like functional medicine colleagues.

And none of us knew we were getting at the same time because I was in your boat too. I'm very much like, I want to try all the things first. And I just had not pulled the trigger on it for so long.

And I will say they have really good sales. So Black Friday's coming up. I would, I would kind of wait till then, but yeah, I think I got it like 30, 30% off or something.

And it has been, you know, I've really made an, an effort to. do it every single day. And that's when I've noticed the difference. When I first got it, I was traveling a ton and I didn't really bring it with me.

It's very compact and you could bring it anywhere you want really easily. But I was just lazy. But when I wasn't doing it daily, I don't know if I noticed that big of a difference, but really starting my day or I have friends who will do it at night before they go to bed.

And it just kind of helped calm like you can just feel it reset things pretty well. So I do highly recommend it. Great. Okay, so switching gears a little bit, let's talk about pans and pandas because I know that you deal with that a lot with your pediatric population.

So briefly go over, you know, we've talked about pans and pandas numerous other times on this show, but just for someone who may not have heard one of those episodes, dive into it briefly.

And then I also want to talk about how we see a lot of these symptoms in adults too, even though technically it is a pediatric diagnosis, we see a lot of this stuff in our, you know, teens, young adults, and even, you know, elderly population.

Yeah, for sure. So, PANS, PANDAS, you know, we take the more broad PANS, right, pediatric acute onset of neuropsychiatric symptoms. So, it's, you know, traditionally when you're even thinking of that name, right, it's telling you like all of a sudden your child is having these like new psychiatric symptoms, whether it's a lot of times it's OCD type symptoms or like angry outbursts or their mood just change or maybe all of a sudden they're having suicidal

thoughts and there's no other change in their life that they can really identify.

And what's going on is typically they've been, they are struggling with some illness like vector-borne disease. Traditionally it's strep, right? You know, strep can do it as well.

Different bacterial type infections, viral infections can really set it off. Even, you know, mold, anything like that that's really going to cause that acute inflammatory response is essentially what's going on, right?

That brain on fire you mentioned earlier. And with kids, they show this acute, you know, change and, and mood behavior. A lot of times you also see ticks or also regression.

So maybe they start bedwetting again, and they're at an age where they've way past that, that type of thing, sleep disruption. So what's important about that is a lot of times when that happens, the symptoms being pretty mental health related, they'll go to, you know, a psychiatric provider.

And if the psychiatric provider is not familiar with PANS or PANDAS, there's going to be put on whether it's anti-depressants, anti-psychotics. I mean, I have people come to me and they've been put on, you know, they're seven years old and they're on like five different pretty heavy medications and nothing's working, right?

And until we actually treat the immune system and the root cause.

## Functional Workup and Root-Cause Treatment

So whether like it is an infection that's currently happening that we need to treat, or it's the immune response that's been, you know, that's happening beyond the initial infection, the symptoms are not going to go away.

And so that's kind of what I see in adults a lot of the time. So you can have it where you get an infection and then you have the sudden change in behavior.

So even OCD symptoms, psychosis, hallucinations, things like that. But I've also seen it where it's like maybe this was something they struggled with as a child.

Like they had a you know, what you would define as a PANS or PANDAS presentation and never appropriately treated it. So they've had these lasting effects.

And, you know, when you're looking at it 20 years down the line, you're not like, oh, I need to treat this specific infection. It's more, hey, we need to address the immune system because at this point, your immune system has gone so haywire that it's continuing to cause these symptoms, particularly because of that neuroinflammation.

So when you are treating a patient, I know you do individualized medicine and you're looking kind of through that functional medicine lens. Can you walk us through kind of like how you would work somebody up and kind of your order or thought process to that treatment?

Yeah, for sure. So You know, the first thing I do with most every, every patient that comes in is to ask them essentially a couple of questions. One is like, when was the last time you felt well?

And that gives me a big idea of like when the seriousness of things started. Cause I think a timeline is very important here. And then also like I asked them, what's bringing you here today?

Like why? today you know if you started feeling bad three years ago why is it today that you're in my office and those symptoms or those questions can tell me a lot because it can tell me when somebody really you know something's switched and then I can start asking you know hey was it a sudden abrupt onset were you exposed?

Did you see a rash that may have been from a tick bite? Were you traveling? Were you exposed to something? Did you have a big trauma in your life or a big change that's happening or that happened at that point?

What essentially was the trigger to whatever is going on? And then what's been going on lately that's made it worse or continued it? And what symptoms are you really struggling with?

So I try to get a big idea of what's been going on in terms of the main concerns. And then I also am asking a bunch of questions in terms of their history from essentially before birth until now, right?

Like, was your mom exposed to anything? What was your birth history? Any infections? Anything growing up? All sorts of different things we go into. know, were there any traumas you experienced as a child?

Because we know if you've heard of the ACEs, acute, you know, the ACEs, then that can lead to other physical health symptoms, mental health symptoms, as well as into adulthood.

So really getting a big history of their life. And then also, what is their lifestyle like? You know, what's sleep like, diet, I get a whole dietary recall, maybe they're very intolerant to gluten and they keep eating that, or they have the celiac gene, or are there any toxic exposures they're being exposed to?

Are they living a pretty toxic lifestyle? And what's their alcohol use? All of those things. So really digging into how can I get the biggest picture about this person and their story as possible.

And then from there, I'm determining, hey, do we need to consider testing? So really like targeting testing to their specific case. Do we need to order a specific Lyme test, genetic test?

You know, have they gotten any labs done recently just to look at like a comprehensive lab panel? What are their inflammatory markers, things like that?

Can we measure, do we need to work on cortisol, their adrenal hormone, you know, and looking at that. And then how do we, one, relieve symptoms and then two, also treat the root cause.

And the way that I approached this is, you know, I'm trying to do both as quickly as possible, but there are cases where until we get to the root cause, their symptoms really aren't going to improve that much.

And maybe we can do something to minimize symptoms as we're doing that. But, you know, for example, maybe they need to do the primal trust or they're really not going to move past this because there is.

like nervous system is in such an overdrive or overdriven state, right? Or, you know, do we need to like lessen some symptoms so that they can be able to then address the root cause?

You know, do we need to like get them into therapy? Do we need to, you know, start with some supplements or something, work on lifestyle things so that they can get to a place where they can really start to work on the mold or to work on the immune system or to, you know, tolerate different medications as needed and that kind of thing.

Yeah. It sounds like we have a pretty similar approach, you know, like get to the underlying root cause, but usually it's root causes, right, because of the havoc that these infections really wreak on the terrain of our bodies and how it changes, you know, the function of the mitochondria, the function of the cell, the function of the organ of the organ systems, etc.

And so You know, it's kind of like evaluating all of the pieces of the puzzle and then fixing the pieces of the puzzle that are off in that particular patient.

For sure. I mean, you even, like you said, it wreaks havoc on everything, right? Like what's going on with their gut? A lot of times their gut's all messed up.

## Why Psychiatric Labels Can Miss the Root Cause

We need to work on that. They're not absorbing things. Their mitochondria is damaged and we need to support

cellular health. Like there's so many things once they get to us, unfortunately that's usually after they've started or like really tried to address this for quite some time.

So there's usually some serious damage that's been done. Yeah. I mean, and in my opinion, you're not going to be able to recover the immune system or really get anything under control if you're not able to heal the gut.

For sure. I remember in my functional medicine training, the phrase I heard over and over again was, when in doubt, start with the gut. And it's honestly something I live by, right?

And also so much symptom relief can come from that. Cause when we're having digestive issues or not able to like go out and eat with friends or just live our life in that way because of digestive issues, people really struggle.

So if we can even give them some relief in that sense, they can develop hope and then they have more in them to even emotionally start to heal other parts of their body.

Yeah, absolutely. So you mentioned before when we were talking the importance of ruling out infections and immune dysregulation before giving someone like a formal diagnosis of a psychiatric illness.

Can you explain that to our listeners why you're so passionate about that? Yeah. I mean, I think, you know, I see so many misdiagnoses in psychiatry. And the way I explain psychiatric diagnoses to a lot of my patients is We, you know, our diagnoses in psychiatry are based on a book called the DSM-5.

It's a diagnostic manual for mental health disorders. And it being five means it's the fifth version of this book. So our diagnoses have changed quite a bit of time.

quite a bit of times, you know, over the last couple decades or last few decades. And, you know, this may be a little controversial to say, but that book was written by a group of probably solely men who sat in a room and categorized mental health symptoms.

And I don't say that in that this book is completely outdated there are helpful parts to it right it is helpful to be able to see certain symptoms categorize them and then understand like maybe different treatment approaches that can help those symptoms but it's very medication heavy and it's not looking at root causes so for example if we take depression as a diagnosis you know the way I would diagnose depression conventionally is, hey, you have to meet these criteria.

There's like a list of symptoms and you have to have a certain amount of those symptoms and they have to be present a certain amount of time and not due to like substance use is really essentially what it is.

And then you fit the diagnosis of depression. Well, some of those would be maybe like low motivation, not enjoying things you used to, like isolation, restlessness, things like that, which could be caused due to so many different reasons.

It could be that your mom passed away a couple months ago and you've really been struggling there. It could be because you have, you know, your hormones have changed.

It could be because of a tick-borne illness. It could be so many different reasons could be causing these symptoms. And if all we do is label you with depression and then the first line treatment in the book is to give you an antidepressant, Well, if you have a tick-borne illness, this Lexapro is not going to treat the tick-borne illness, right?

## Neurological Symptoms, Neuropathy, and Brain Fog

It might even make it worse. And if Lexapro doesn't work, our second line treatment is a different antidepressant. And so there's really no like, hey, let's get to the root of the symptoms.

We're looking in functional psychiatry, I'm looking at things as symptoms as opposed to just diagnoses. So

depression and supposed to just being like you have a diagnosis of depression, I'm saying, what's causing these symptoms of depression?

And let's treat the causes of the symptoms of depression. And so that's why I really think it's important to treat and look for infections before just labeling someone and giving them a psychiatric medication, unless you're using the medication in a certain instance for symptom relief and it's a tool to get somewhere else while you're treating whatever the root cause is.

But really, like infections, inflammation, so many things can show up as depression, anxiety, cognitive decline, you know, brain fog, ADHD, and if we're not, If we're not addressing and treating those, nobody's ever going to be able to recover.

Right. Right. And that's one of the big red flags too, you know, when it comes to making a clinical diagnosis. It's like if the patient isn't responding to medications or treatment or therapies that, you know, traditionally are supposed to help said diagnosis, then it's probably not the right diagnosis, right?

And you have to keep looking. You know, the one thing that's nice about a diagnosis is that it describes a cluster of symptoms, right? But again, it doesn't tell us why and it doesn't tell us how to fix it.

Yeah, no, I completely agree. And I think that I love that point you made, like if somebody's not responding, and that goes in the functional world too, is I've seen people push things too far, right?

If somebody's not responding or they're responding poorly, we need to take a step back and we need to ask the question again of what, why, how, what's going on.

Yeah. So shifting gears again a little bit. So beyond mood, cognition, behavior, talk to us a little bit more about the neurological impacts of these infections.

You know, things like neuropathy, brain fog, sensory changes, et cetera. Yeah, I see a lot of different things, as I'd mentioned, just depending on the person, because it presents so individually.

But it really depends on where in the brain either the infection is or the inflammation is attacking, of what symptoms you'll get. So you definitely will see the neuropathy for sure.

I see a lot of sleep disturbances and different like somatic complaints in addition to the neuropathy. So pain, paresthesias, you know, like migrating, arthralgias, all of that.

I see headaches a lot. And a lot of times that's due to like the neuroinflammation as well. And then, and also the, you know, higher cortisol that can cause those as well.

And then a lot of just in general cognitive symptoms, a lot of slowed processing. You know, I'll give an example personally when I, you know, because this is just such a pronounced example, but when I was really struggling with Lyme, I went to dinner with my family over the holidays, and my parents paid for the dinner.

I have a brother, so it's my brother and my parents, and this was years ago. My parents paid for the dinner, and then they went to the restroom before, so they were like, hey, would you just sign the check when it comes back?

And I can't remember the exact number, but say the check was for like $80. I wrote the tip is like $105 and then the total as like $50. Like the numbers made absolutely no sense.

But in my head, I don't really even know like what happened. And my brother looked at it and was like, what did you like? What is this? And I was like, I have no idea how I got that or got there, you know, got those numbers.

But really, it was like such a slow processing moment and experience. And even to be able to like catch it, it took me forever. And I really like I remember realizing at that point, like, oh, my gosh, my brain is just not functioning

correctly.

So you see a lot of things like that are people running like red lights because they can't process it as quickly. more executive function stuff, so maybe impulsivity or inability to make good decisions, stuff like that.

So it really shows up in so many different ways, even beyond just the mental health and physical health stuff. You see a lot of cognitive things, a lot of people almost presenting like dementia-like in a way.

So going back to the neuropathy, do you have any good tips or tricks with the neuropathy and how often do you see that in your patients? I would say I see it maybe about half or a little less than half the time.

## Cell Membranes, Nutrients, and Phospholipid Support

And I, you know, a big thing of what I do is I really like to get a comprehensive lab panel and sometimes even like a neutral valve and stuff to make sure nutrient levels are appropriate.

Cause a lot of the time what we see, particularly with VectorBorne, illness patients is they're not, you know, like I mentioned, their gut is a lot of the time not functioning properly and they're not absorbing nutrients very well and or they have, you know, they're, they're getting really nauseous.

They have more food aversions, lower appetite. So they're not getting enough nutrients to begin with either. Yeah. And so a lot of times neuropathy can be due to nutrient deficiencies.

So making sure that like those are restored, you know, they're taking the vitamins that they need and absorbing them properly, that can make a big difference.

I also, you know, one of them being magnesium, I also am a big fan of like Epsom salt baths that can be helpful for some of them. I also really like nitric oxide supplements, which can increase blood flow and kind of I've seen them reduce some of those symptoms as well.

So really trying to figure out like you know, is there something, some deficiency or something that we can act on that will improve this beyond just, you know, treating the Lyme or, you know, Bartonella or whatever is going on?

Yeah, I'm a really big fan of doing an intracellular micronutrient panel and looking at the levels of micronutrients in the cells. It's probably the one test that I order on every single patient that I see, and I think it makes a world of difference because it's really hard to guess what nutrients people are deficient in.

And a lot of times, like I have patients that come in on folate and B12 or a B complex, and then we go through all their B vitamins and they're all trash.

know like their levels are trash and then you know which does make me extrapolate that the supplement that they're taking is probably trash too or to your point that the gut is so inflamed and their digestion is so screwed up because i have so many patients that have hypochlorhydria right where they're not making enough hcl they can't activate their pups in and then like they literally cannot even you know upstream like in the in the stomach and the gastric acid pouch start digesting their food properly.

For sure or they're you know that plus they're so stressed out that they're not even like chewing their food, which doesn't mechanically break it down, you know, saliva chemically breaks it down, so they're skipping that whole process, and then it goes into the gut that, you know, doesn't have enough stomach acid, and then you're even, you have even more issues.

And then a lot of them will have like, you know, maybe chronic diarrhea, so they're just, they're not even absorbing the nutrients at all. So yeah, and like you said, there's so many, as we know, supplements aren't regulated, which is why they, there is so much criticism around supplements.

But if we can use quality supplements and also the, you know, make sure somebody's taking it the correct way with or without food, right time of day from a trusted brand that, you know, also in a form they can absorb.

then it can make such a difference because I see the same thing like you said, you know, I see people's B vitamins in the trash or they've been taking, you know, high dose vitamin D and their D is like 16 and so really figuring out like why they're not getting the nutrient and then supporting the cell in that way.

Another great thing that I've really loved lately for cellular health for almost anyone too is like a really good quality phosphatidylcholine too that can that can really help so that their cells can start to function correctly and take in the nutrients.

Yeah, I think two of the nutrients that I see in almost every single patient deficient is phosphatidyl. Well, you can't look for phosphatidyl, but there are choline levels and there are serine levels.

And then seeing that a lot of the intracellular numbers are pretty low, kind of leads me to believe it's like, well, what's the common denominator? Of course, there could be a digestive issue.

But if you're looking at like, okay, serum levels are normal for a lot of these things, which often I do see, and then the cellular levels are, you know, kind of like in the gutter.

It's like, okay, is it a cell membrane thing? Is something going on where the cells aren't allowing the nutrients to come inside? And so I think the more and more that I learn about the cell danger response, the more and more this makes sense.

cell is just sort of like, you know, shut down and it's just kind of like waiting for the danger to go away. And it stops doing its two main functions, which is to allow things into the cell and take things out of the cell as well as talk to other cells.

When it goes into that cell danger response, it doesn't want to allow anything to come in.

## Diet, Hope, and Finding the Right Provider

And using phosphatidylserine, phosphatidylcholine, as well as the other phospholipids is huge in restoring proper function of that cell membrane and being able to get out of that cell danger response, again, with some of the therapies that we've talked about earlier to address like the dysautonomia that's going on.

For sure, I completely agree. And one thing I've realized too over the years is there are, and it's more, I'm forgetting the exact gene, but it's a genetic variation that some people have where they actually won't even absorb the, like if you give them phosphorylcholine, they're not able to take that in and have their cells utilize it correctly.

if it's in an oral form, but if you give them an IV and almost like a PK protocol type thing, they will respond like significantly better to it. So, you know, that's something I've kind of been playing around with as well.

And again, like not everybody should have the IV version and not everybody should have. So just kind of figuring out like, what somebody's body needs, but I've seen if we can get their body to use phosphorylcholine, phosphorylserine, it can make a huge difference.

And phosphorylserine is something I use with even just like basic anxiety patients and whatnot. A lot of us don't have enough of the serine and it can be really, really helpful for sleep, mood, you know, calming the nervous system, all of the things.

Yeah. And it's funny too, like if you look at the pathophysiology of some of these infections, like Bartonella and Mycoplasma really go after the phospholipids and fat soluble vitamins.

So some of it is just almost like the nature of the infection and what they need to rob from us to live, but then it

leaves us deficient, which then leads to more symptomology.

Yeah, for sure. I completely agree. Yeah, it's fascinating. There's so much more research coming out about it too, so it's fun to look at all of it. Yeah, it really is.

My colleague and myself are in the process of putting together kind of like a style of eating for dealing with complex chronic illness. Just because there's so much information, I'm like, wait, how does this not all exist in one place?

That's amazing. Yeah, stay tuned. Yeah, please. I need that for my clients. It's I get those questions all the time is just like, you know, what's the best diet?

What's the best this? What's like, what should I be doing? Because there's so much out there. And, you know, I think it's overwhelming, even for us as providers, I can't imagine as just somebody who doesn't even work in this field, like just a normal person across like down the street what they're thinking with all of the things they're told.

I had someone come into my office the other day with a sheet that her dietitian had given her from a very like well known highly esteemed place in town and it told her it said like no butter only margarine reduce your protein to this level like it was everything that I was like where is this information coming from you know so I think there's there's There's so much out there that's good and there's also still so much out there that's not as great.

We can have like what to do in one place. That would be amazing. Yeah. And I think it's hard too, right? It's like, you know, the oxalates, the lectins, the, you know, like the fermenting like from the low FODMAP and then you've got like the high histamine and then, you know, it's like, Paleo, anti-inflammatory, and it's like, you know, not everyone needs all of that.

You know what I mean? So it's kind of like navigating through like what actually is important. And then by the way, can we come at it not from the don't, don't, don't, don't, don't perspective, but more like, okay, what do I eat?

You know, so like here's you know, here's your, your sort of like menu of all of the things that are like safe and then kind of turning out to be like, you need to go get at least this many star wings of this, this and this.

So it's like, you're setting that person out to eat instead of like setting them up to like, sit there and starve when their bodies are already starving.

You know, I love that. I, that's something I work on, you know, because I see a lot of eating disorder patients as well. And just in the functional chronic illness world, I feel like we can, as providers, if we're not careful, like spark that in people because there's fear around certain foods.

So I'm very big on like, Hey, what can we add in? Right. As opposed to like take this, this, and this out. It's like, what can we add in to improve how you're feeling?

Right. Now that's great. Okay, well before we wrap up, what words of hope or encouragement do you have for our listeners? I would just say if you are struggling with a chronic illness, particularly something that you can't figure out what it is, I would find somebody who is fluent in tick-borne illness, a provider that knows at least how to look for that because it can present in a lot of different ways.

And if that's what's going on, it's really important you know you're with somebody who knows how to treat it, how to look for it. And just if you've been kind of brushed off or told it's in your head, I just really hope that you just keep going because there are answers out there.

It is very rarely just in your head and there is hope. I promise you there is hope. We both, you and I have been through this as a patient. So I, you know, I know that there's another side to it.

There is. And if you haven't found the right person to work with yet, keep going. If your doctor doesn't believe you, keep going until you find someone who does.

For sure. And you're welcome to share like my socials, but if you guys just… No, why don't you do that? Go ahead. How can our listeners find you? Yeah, I was going to say I love connecting with people.

So if this is someone or if you feel like you are struggling in this way, please reach out. I'm happy to help you find resources that would be appropriate.

But you can find me on Instagram. I'm wellness with Everest. I also have I have two practices. One is Everest functional psychiatry and wellness and then evergreen functional collective.

So you can kind of reach out to me any of those ways. But I love connecting with all of you guys and Yeah, I'm happy to help in any way I can. And what state are you in?

I live in Texas, so I live in Dallas, and I have a California license as well. I'm expanding shortly, hopefully, so yes. Wonderful. Well, thank you everyone for joining us.

We hope this brought you one step closer to true healing. If this helped you, share it with someone who needs it too, because together we all heal stronger.

We'll see you next time. Bye-bye. If this episode gave you an answer, brought you new insight, or made you think differently, subscribe to the Lime Bites podcast and share with someone who's ready to take control of their healing journey.

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