



Episode 13: Lyme Disease and Persistent Infections: Root Causes of Fatigue

Evan H. Hirsch, MD: Hello, and welcome to the Fix Your Fatigue Podcast. Whether you can't get out of bed in the morning, your energy crashes throughout the day, or you're a biohacker looking to optimize your energy, productivity, and focus. This podcast is for you. I am Dr. Evan Hirsch. And I will be your host on your journey to resolving fatigue and optimizing your energy. And we'll be interviewing some of the top leaders in the world on fatigue resolution. Welcome.

Evan H. Hirsch, MD: Hey everybody, welcome to another episode of the fixture fatigue podcast. I'm so glad you're joining me today. So today we've got Dr. Darren Ingles with me and I'm super excited about this because he's going to be talking about one of my favorite subjects, Lyme disease. So Dr. Ingles is a licensed naturopathic doctor with 30 years experience in the healthcare field. He received his Bachelors of Science degree in Medical Technology from Purdue University and his Doctorate of Naturopathic Medicine from Bastyr University in Seattle, Washington just up the road for me. Prior to attending medical school, Dr. Ingles worked as a Clinical Microbiologist Immunologist at Lutheran General Hospital in Park Ridge, Illinois, which gives him a lot of credibility when it comes to talking about infections.

He is a fellow with both the American Academy of Environmental Medicine and the Medical Academy of Pediatrics Special Needs. Dr. Ingles is the author of *The Lyme Solution: A 5-Part Plan To Fight The Inflammatory Autoimmune Response And Beat Lyme Disease*, which was published in 2018 through Avery, which covers an integrative natural approach to the treatment and management of Lyme disease. He overcame his own three year battle with Lyme disease and applied the same principles to now more than 6000 Lyme and coinfection patients over the last 20 years, utilizing a naturopathic approach and therapeutic lifestyle to help each person overcome their illness. Dr. Ingles has been featured on numerous podcasts, articles and docu series as one of the leading experts in Lyme disease. Dr. Ingles, thanks so much for being on with me today.

Darin Ingels, ND, FAAEM: My absolute pleasure, Dr. Hirsch. I'm glad to be here.

Evan H. Hirsch, MD: Yes and we probably should just drop the doctor right and just-

Darin Ingels, ND, FAAEM: [laughing] That's fine with me.

Evan H. Hirsch, MD: -Awesome. So we're gonna be talking about Lyme disease and persistent infections as a root cause of fatigue. And I found that there's 33 different causes of fatigue and infections are such a big part of this. So I'm really so glad that you're going to be talking about this. So first thing I'd like to talk a little bit about your story. You talked, you mentioned in your bio about how you Lyme affected you for three years. Can you just tell us a little bit about that?

Darin Ingels, ND, FAAEM: Sure. Well, I was living in Connecticut, and for people who don't know Lyme disease is named after Lyme, Connecticut. It's a city in Connecticut that was about 20 minutes up the road from where I lived in about two weeks before I was set to open my own practice in 2002. I got bit by it tic and I had classic Lyme disease. I had a headache. I had 105 fever, joint pain, numbness, tingling. Everything you'd read in a medical textbook about Lyme disease, I pretty much had all of it. And I got treated right away. I identified it early and started on antibiotics. And after four days of antibiotics, I actually felt quite well, but I did my 21 day courses recommended, but anyone who's ever owned their own business knows what it's like when you get started, you're kind of doing everything.

So I was the doctor, I was the receptionist. I was [laughing] the bookkeeper and it just ended up being long days. And so eight months into working six, seven days a week for 10-12-14 hours a day, it really started taking a toll on me and I started to relapse. And I identified again that I was having a relapse. So I started back on antibiotics and it wasn't helping me. I changed antibiotics. It wasn't helping me and so I end up going on different courses of antibiotics for almost nine months, and indeed got worse. So I was more tired. I was more achy. My gut was a wreck from the antibiotics, and I was fortunate to have known of a doctor in New York City named Dr. Zhang .

He's a Chinese Medical doctor, but works as an acupuncturist in New York City. And he had developed a series of Chinese herbal formulas, specifically addressed Lyme disease. And I had seen patients over the years who had worked with him. So I went to see him, he started me on a regimen of Chinese herbs and acupuncture and also just the realization that I wasn't taking care of myself the way I should. And I wasn't really walking the walk and talking the talk. So that combination of kind of getting my life in better order or taking the herbs within a month, I felt 80-85% better. So that was really my realization that I needed to come back to my naturopathic roots and really heed my own advice and again, start taking better care of myself. And over the course of it still took me probably another year and a half to two years to feel really 100% well again, but I eventually did get back to that point.

And I can remember being so tired that I could literally get off the couch and over the course of the next two years. I started to study martial arts and then seven, eight years later, I got a black belt in karate. So-

Evan H. Hirsch, MD: Wow.

Darin Ingels, ND, FAAEM: -it was a healthy reminder for me about how taking care of yourself is a critical part in getting well and whether it's persistent fatigue or really any other kind of chronic illness. But I really just started applying what I was doing for myself to my patients who had somewhere issues and found they were getting better faster, and then people really weren't able to overcome this chronic illness.

Evan H. Hirsch, MD: And that's such an important part of this. This is not a life, a death sentence, right?

Darin Ingels, ND, FAAEM: No, I think if you go on social media, you might be thought you might think otherwise. I'm kind of appalled when I go on certain Facebook groups and see the things that people say, and like Lyme disease is really challenging for a lot of people and I don't underestimate that at all. And the one thing I've learned having treated thousands of Lyme patients is that anyone with Lyme disease, your Lyme disease is your Lyme disease and the way it affects you can be profoundly different than how affects other people. Some people have it in a very mild fashion and other people are completely debilitated. But that doesn't mean you can't overcome it.

And I get discouraged when I see people that they've been through a lot of different treatment that hasn't worked for them. And therefore their feeling is nobody gets better and that's the message they send out there. So at some point, today, we might want to talk a little bit about mindset, because I think that's an important part of healing. And it's the one thing when you've got a chronic illness that tends to kind of tank first. But if we can get people in the right mindset, then we set the stage for the body to start really healing in the way that we'd like it to.

Evan H. Hirsch, MD: Well, then let's do that. Let's talk about mindset. Because that's, I think that's incredibly important. I incorporate that into everything that I do as well. What do you find that's particularly helpful for this? Do you recommend a daily practice? Are there certain things, tips and tricks?

Darin Ingels, ND, FAAEM: Yes it's it. Yes, I think a daily practice in the whether it's in the form of meditation, I have some people that will literally journal and they'll journal out their thoughts. And I like the idea of using your brain as a tool to heal. I mean, this is the most powerful tool the body has. And we know that the brain can drastically impact what happens in the physical body. And our brain responds to pictures, it doesn't respond to words as much. So painting that picture of what your life is going to be when you're well can be really very profound. And there's actually studies showing this is a way that no, we can utilize the brain to help us heal. Dr. Bernie Siegel, if you're familiar with his work he was a cancer surgeon, and he implemented these techniques with his patients and he found they recovered faster, their cancer went away, just through the power of visualization and mindset.

So when you start setting the stage for your subconscious mind to take in that information that allows the body to really start acting on that. So, for me, I mean, I do a visualization every day of what my life would be like if everything was perfect and I

wasn't 100% healed. If, what am I doing? Who am I with make it very visual, make it very sensory. Incorporating all those senses is very powerful for the subconscious. And if we can tap into that, again, we give ourselves a really a fighting chance and getting well.

Evan H. Hirsch, MD: I love that oftentimes, I'll recommend that people do what their perfect day looks like.

Darin Ingels, ND, FAAEM: Right.

Evan H. Hirsch, MD: So they're kind of going through that whole thing. Yes. That's great and it's just like your background. It's like.

Darin Ingels, ND, FAAEM: [laughing] Yes, I wish this really was my backyard, but [laughing]

Evan H. Hirsch, MD: That's great. When that's and that's actually when I do my visualizations, I have a daily practice as well. And my visualizations, I actually wake up and I'm on the beach. I'm in Spain, and my wife's there and we're staying in this home. I don't know if an Airbnb or whether we actually living there, whatever. And my mission is accomplished in life and my family's good. So yes, I think that that's so important, so glad that that's part of your programs as well.

Darin Ingels, ND, FAAEM: Yes. And I think it's really challenging for people. I mean, I get, it's like, when you're not feeling well, and you're discouraged it sounds like a bunch of fufu mumbo jumbo, the power of positive thinking, I'm like, but it's so much more powerful for that. And I think people need to give it a chance and you'll start surrounding yourself with positive people. Start putting that positive messaging in your subconscious, whether it's drawing a picture, writing it out, meditating. Find what works for you, but when I find people who do this kind of work, again I see better results, I see faster responses. And again we've got this built in thing that's designed to help heal us, why not utilize it?

Evan H. Hirsch, MD: Yes. It's so important and there is research on it. The neuroplasticity, and-

Darin Ingels, ND, FAAEM: Yes.

Evan H. Hirsch, MD: -I love the, was it the Harvard study where there was pianists visualized practicing and other ones actually practiced. And they both performed just as well, except the ones that hadn't practiced didn't have the muscle memories. So it's like, there's good research on this. Absolutely.

Darin Ingels, ND, FAAEM: Yes. And I've even had a lot of people go through any hoppers program, the DNRS, the dynamic neural restabilization system. And again, it's all about retraining the limbic system. So you know, that part of the brain that drives a lot of our emotion and mood. And again, it's a very, it's a relatively easy tool for people

to apply. But it does take discipline and you got to do these daily exercises, but for the people I've had go through that program, again, it can have a profound impact on their outlook, their mood, how they feel about themselves. And again, it's something that people can do at home, so it's nice.

Evan H. Hirsch, MD: Yeah, and then it affects the physical I mean, I found it especially be helpful in people who are have multiple chemical sensitivity.

Darin Ingels, ND, FAAEM: Yes.

Evan H. Hirsch, MD: Yes. Awesome. So let's talk about Lyme disease. So what is Lyme disease? And how does it affect fatigue?

Darin Ingels, ND, FAAEM: Well, Lyme disease itself is a bacterial infection. And it's primarily transmitted through tick bite and primarily as specific tick, all the deer tick. And what we've now learned is that Lyme disease is epidemic around the world. In the United States, we get over 300,000 new cases a year. So most of the cases still come from New England, the central Midwest, and along the West Coast, but Lyme disease has been reported in all 50 states. So even if you live in the middle of Arizona, where we don't typically think of the desert having a lot of ticks, they're still exposure in some areas, and the reality is that people travel. So even if you live in a state that's not necessarily known for having Lyme disease, if you've ever gone camping in Wisconsin, or you've been to Lake Tahoe, or someplace like that you may have had exposure and didn't know.

And part of the problem with Lyme disease is that these ticks are teeny tiny, they're about the size of a poppy seed, even when they're falling gorged And when they bite you, they have an anesthetic in their saliva that you can't feel it. And if you get hit by a mosquito or a fire ant, you feel it, with a tick bite you don't feel it. And these ticks like to go to the dark, warm, moist areas of your body. So behind your knees under your armpits in your hairline. So they're small, they're hard to detect, you don't know that they're there. So a lot of people who get exposed. They just don't know. And one of the classic signs of Lyme disease is this Bullseye rash. And the CDC says up to 80% of people who get Lyme disease get the rash.

However, when you look at the research, the research suggests it's probably only 43% or lower, and I think most of us in the Lyme world would probably suggest it's probably 20% or lower. So for people who get that Bullseye rash, we know that you've been exposed to Lyme, but the absence of the rash certainly doesn't indicate that you could have had that exposure.

Evan H. Hirsch, MD: Nice and and you when you say Lyme disease you talking about just *Borrelia* or do you cast a broader net?

Darin Ingels, ND, FAAEM: Yes. We say Lyme disease because Lyme disease is very much tied in to this organism called mostly *Borrelia burgdorferi*. There are other strains of *Borrelia* that can cause Lyme disease, but we probably should say tick-borne disease because a lot of these ticks that carry Lyme disease also carry what we call co-infections.

So things like Bartonella, which is a bacteria, Babesia, which is a blood parasite, Anaplasma, Ehrlichia. I mean, gosh, every time I go to a Lyme conference, it seems like we've learned more things that ticks can transmit when they bite you. So when we get into testing we're not just testing for Lyme disease, we're really testing for this litany of different microorganisms that we know that can be transmitted through a tick bite.

Evan H. Hirsch, MD: Right. And what do you think about other potential routes besides tick bites? I've-

Darin Ingels, ND, FAAEM: Yes.

Evan H. Hirsch, MD: -heard and read about blood transfusions and vertical transmission through the placenta. What do you think about those?

Darin Ingels, ND, FAAEM: Well, vertical transmission from mom to babies actually been very well established. We now have several studies showing that mom indeed can pass it for to her baby. If she has active Lyme disease, we know that if mom gets treated, the risk of passing on to her offspring goes way, way down. I think the one that's really controversial is sexual transmission. And the problem is, is there's a lack of research on sexual transmission of Lyme disease. There's one study to date by Dr. Stricker up in the bay area where he did find Borrelia in the semen of men in the vaginal secretions of women. However, you can imagine it's not very ethical to intentionally infect someone, if you think that's a possibility. So they've not done the research, even in animal studies to show that you can infect an animal, have them have sex and then see if you can pass it to the other animal.

Most doctors I know in the Lyme world do feel that their sexual transmission because that's what they've observed in their patients. I know Dr. Horowitz who's one of the big Lyme gurus. He, his wife has Lyme disease and he's been very open that they have unprotected sex and he's not too worried about it so I don't think it is a major way that people get Lyme disease. I think a tick bite is the overwhelming majority. But there is this big question mark about sexual transmission. And I err on the side of caution until proven otherwise, I do recommend using condoms just as a very method to protect your partner, because we don't know. And it may be that the risk is very, very low. But until we know that risk is zero, again, I'd rather err on the conservative side. And then there's some other suggestion that other insects can transmit Lyme things like mosquitoes and fleas. Again, we have a few small studies out of Europe, suggesting that may be possible. But again, I think that accounts for a very small percentage of people who acquire Lyme disease.

Evan H. Hirsch, MD: Yes. And then it causes fatigue. How does it cause fatigue?

Darin Ingels, ND, FAAEM: So Borrelia very specifically, actually can directly damage your mitochondria. And I know you talk a lot with your group about the importance of mitochondrial function and energy production. So when you get Lyme and certainly for people who didn't identify it early, the longer it's there, the greater risk it has of actually damaging your mitochondria. And for those who may not know, the mitochondria are

part of the cell that literally create energy. So as your mitochondria get damaged, your body's capacity to generate energy just goes down. So that's that deep bone crushing fatigue, that's muscle weakness, and the lack of strength, stamina, libido, all of that can tie in to really just poor mitochondrial function.

And we know that Lyme directly and possibly some of these other co-infections, damage the mitochondria. And I think this gets to be one of the big problems in the Lyme community. Again, if you don't have classic Lyme disease, and there's over 100 symptoms associated with Lyme disease, and a lot of them are vague and they look like a lot of other things. In fact, we call Lyme disease, the great imitator of the great mimic, because it looks like 100 other different conditions. So you go to you're a doctor and you've got fatigue and maybe got some joint pain and a few other miscellaneous symptoms, particularly if you live in an area where Lyme disease is not endemic, it'd be very easy to think you've got maybe Epstein-barr, or you've got some other type of illness that's unrelated to Lyme.

But again, the lack of making that diagnosis early, again, the longer this persists, the greater chance it has of damaging your mitochondria. And this is I think, what we see a lot in the Lyme community is that the fatigue just gets worse and worse as time goes on. And again, I've seen patients where they get to the point where they're wheelchair bound, because they just literally can't stand on their own anymore and they go to neurologists and neurologically, everything seems to be fine. They just don't have the energy to stand and walk on their own. Fortunately, that's a very rare circumstance with Lyme disease, but it does happen. But I think when you look at the literature, we've got several studies again, showing that borrelia directly damages the mitochondria.

This gets compounded, if you've identified Lyme, and if you go through the regular course of treatment, which is antibiotics. We know the law the antibiotics that are used to treat Lyme, like doxycycline also damage the mitochondria. So depending on where you are in your course of treatment and what kind of treatment you're doing a lot of doctors will use very long courses of antibiotics. And not that it's right or wrong. It's just the reality is that the longer on these antibiotics, the greater risk you have of also damaging your mitochondria. So here you've got a microbe this damage your mitochondria, now you've got a treatment is damaging the mitochondria. And he puts the two together. Although your joint pain might get better, some of the other symptoms might get better, you're gonna have a hard time overcoming that fatigue aspect, just because you got these two things kind of working against it.

Evan H. Hirsch, MD: Yes, so then how do you mitigate that when you're treating Lyme disease? How do you mitigate that damage? Or I guess how do you boost the mitochondria?

Darin Ingels, ND, FAAEM: Well, I think for money standpoint certainly as a Naturopathic doctor, and again, from my own experience I try not to use antibiotics if at all possible. I mean, herbs, I think work really quite well in treating active Lyme and they don't have that negative impact on the mitochondria. But for people who've been on antibiotics, there's a lot of things we can do nutritionally, to try and help support the

mitochondria. We call it the Mito Cocktail, and I'm sure you've talked about it with your group before too. But we use things like Coenzyme Q10. We use things like L-Carnitine, or Acetyl-L-carnitine. We use vitamin B6, we use magnesium. No, all of these are co-factors in the function of mitochondria.

And if someone's inactive treatment, it's kind of like draining a bathtub and filling it up at the same time, right? It's like which process can we get to go faster? So can we rebuild the mitochondria faster than they're breaking down. So as much as we can mitigate the mitochondrial loss, that's optimal, but if someone's in the course of treatment, and they kind of have to be on that for whatever reason, then we have to support the body as much as we can nutritionally to help rebuild those mitochondria. And we're fortunate now that we do have some testing that gives us a relative idea about how the mitochondria are functioning. So there's a lab that we work with we'll take some cheek swabs, and we'll give us a pretty rough estimate about mitochondrial function where a long line things might not be functioning well. So at least we have a marker that we can measure over time to see are we getting improvements in mitochondrial function.

Evan H. Hirsch, MD: Oh, that's cool, what lab is that?

Darin Ingels, ND, FAAEM: The lab is called ILIAD.

Evan H. Hirsch, MD: Okay.

Darin Ingels, ND, FAAEM: I-L-I-A-D. And they do either both a blood test or a cheek swab. And they can actually measure the different parts of mitochondrial function and tell you where specifically things might be breaking down. It doesn't necessarily guide treatment, per se, but at least whatever treatment you're doing, you can monitor of course, does the patient get better? That's the most important thing that we do have an objective marker we can measure are we seeing improvements in mitochondrial function. And in this test has been out now I want to say for maybe three or four years.

Evan H. Hirsch, MD: That's really interesting. So let's get really practical here. So somebody walks into your office, what makes you think that they have Lyme disease? What are you looking at?

Darin Ingels, ND, FAAEM: Well, the big red flag for me is when I see a combination of neurological symptoms and arthritic symptoms. There are very few things that have both. When you look at a lot of other autoimmune diseases, which are probably the closest things that mimic Lyme disease. They'll usually have the arthritic component but not necessarily the neurologic or vice versa. So when people are coming in, they're talking about having neuropathy numbness, tingling, joint pain, brain fog, fatigue, sleep disturbances, balance or coordination issues. That combination is assigned to me that we need to at least investigate the possibility that there's whether Lyme disease or some other co-infection because again, there's just not too many things that contain both.

One of the other classic Lyme symptoms I did mention is what we call migratory joint pain. And when you've got rheumatoid arthritis, it's the same joints, they can change in the intensity of how inflamed they get, but it tends to affect the same joints over and

over, with Lyme disease though it'll change. And one day is your right shoulder the next day to your left knee, then it's your right ankle, then it's your left hip, and it just seems to kind of move around your body. And again, as far as we know from the literature, there's no other organism that causes migratory joint pain. And so that bull's eye rash and the migratory joint pain are the two signs and symptoms that we can pretty much positively identify Lyme disease just from those symptoms alone.

Evan H. Hirsch, MD: So where does testing fit into this?

Darin Ingels, ND, FAAEM: So testing so I was a microbiologist before I was a doctor, I used to do Lyme testing for a living. [laughing] Back in the day, we hardly ever did it because this was the 1991 were Lyme still early, people didn't really know about and I was living in Chicago and definitely in the Midwest Lyme was still kind of oblivious. But it's interesting in 40 plus years of research, this test has never evolved. And what's really interesting is that the testing that's currently out there was never designed to be diagnostic. It was actually designed to monitor people that had known Lyme disease. So for the people who had the classic symptoms, they had the bullseye rash, the high fever, the joint pain, all that they wanted a way to monitor their antibody responses, and the CDC has this very strict criteria of what you call a positive test.

So the way that they do it is you do a screening test which is a combination IgG and IgM antibody test so IgM is the antibody we associate with acute infection, and IgG is the antibody we associate with past exposure. So they do this screening test. If your test is positive, then it flexes over to what we call a Western blot was a more specific antibody test. And we know that your immune system can make several different antibodies to different proteins on the Lyme bug surface. So the if the western blots positive then they say, "Okay, you've been exposed to Lyme disease." The problem with it is that at best this test is only for people who have acute Lyme disease. We know the further you get away from your exposure, immunity naturally wanes.

So if your exposure happened a year ago, five years ago, 10 years ago, the likelihood of picking it up on this test is very low. The other problem is that the screening tests it's available is not sensitive. And a sensitive test means if you have the disease, what is the likelihood the test will pick it up? Well, the research shows that this test is only about 40% sensitive. In the lab world, that's terrible. As a screening test, typically you want sensitivity be 95% or higher. So why we allow a poorly sensitive test to be the gold standard and really haven't changed that is kind of beyond me. And what's really interesting is that when I had Lyme disease, I did my own test, of course, my screening test was negative, but I knew better and I went ahead and did the western blot. And then my Western blot blew up like a Christmas tree.

So if I had gone through the CDC guidelines of doing the screening tests first, it would have said I was negative and it never would have even flexed over to the Western blot. So because it's an antibody test, it's also dependent on how robust your antibody responses. So if you've got any element of immune deficiency, you may not generate a lot of antibodies, even if you've had that exposure. And on the western blot test, unfortunately, the CDC has the position that if you have Lyme, you make a lot of

antibody. So the threshold in which they call each individual antibody positive is pretty high. And one of the labs I work with actually sends me a copy of the Western blot and it shows me that percentage, and you have to be at least 60% of the control to call each antibody positive and I seen people come back at 58% 59% sent some like really 1% of the difference you do or do not have Lyme disease, it just doesn't really make any sense.

And what we've learned in 40 plus years of research, too, is that some of these antibodies are very specific to Lyme, some of them are not. So why we haven't changed it to really hone in on the Lyme specific antibodies and kind of ignore the nonspecific antibodies. I don't really understand the politics behind it. But in my world, if I see someone who's got even one line specific antibody, which again means as far as we know, there's no other microbe that triggers that antibody. So it's not a cross reaction with something else. And they have clinical symptoms. That's significant. What's really interesting if you go to the CDC website and read about Lyme disease, it tells you right on their page, if you go under diagnosis, it says based on signs and symptoms, and then bullet point two is you live in an area that's endemic for deer ticks, then basically the laboratory test is just there to confirm your suspicion.

So Lyme to this day is still a clinical diagnosis. I think a lot of doctors don't understand that. That their basing your complete diagnosis on that piece of paper. And you have to have two out of three IgM antibodies or five out of 10 IgG antibodies on that Western blood test to call it positive. But if you've got one line specific antibody to me, it's like being a little pregnant. I mean, you are, you aren't [laughing] so if you caught it, if you've got a Lyme specific antibody, again, I think it's significant. So this is kind of where I think those of us in our camp and the Infectious Disease doctors out there sort of disagree because they follow the strict CDC guidelines. We have a different interpretation of the data. And understand because it's an antibody test. It's only telling you you've had exposure, it still doesn't tell me you have Lyme disease.

If I tested everybody in the United States, no doubt, I would find a lot of people that had antibodies to Lyme, and they may never had a single symptom. So if they got that exposure, they had a robust immune response. They could have gotten rid of it before it ever caused the problem. Yet they'll show evidence that they had exposure to the antibodies even though they knew ever developed symptoms. So we don't treat people just because they have a positive test. And they certainly need to have the clinical symptoms to support that. But by and large, most people coming to my clinic are symptomatic. They've been to numerous doctors, they've been turned away or dismissed. And often we find that Lyme or one of these co-infections is really one of the root cause of their symptoms.

Evan H. Hirsch, MD: Yes, that makes a lot of sense. You're definitely preaching to the choir. Yes. And I think that's really important to reiterate that, based off of your symptoms, you can really determine whether or not you have Lyme.

Darin Ingels, ND, FAAEM: Yes. And Dr. Richard Horowitz developed a questionnaire called the MSIDS. It's a very long questionnaire, and he's actually validated in studies and that depending on how you score on that questionnaire, is a

pretty good indicator that you may have Lyme or one of these co-infections. I sort of adapted it and I have a smaller version in my book that's just a little quicker and easier. And again, I find it's a reliable marker when I compared to what we find when we do the lab testing. And so there's a way that you can access Dr. Horowitz's quiz or my quiz. If you're concerned, you can take it see how you score. And that may be an indication that that might be something worth investigating.

Evan H. Hirsch, MD: You also have a great quiz on your site that people can go through. I actually went through it myself this morning.

Darin Ingels, ND, FAAEM: Yes.

Evan H. Hirsch, MD: And I yes, I thought it was great, really thorough. And then at the end, it kind of gives you some information about next possible steps.

Darin Ingels, ND, FAAEM: Absolutely. Yes. I mean, it's just a quick, easy way. If you've ever been suspicious about whether you had a tick bite you weren't sure. And you've been feeling crummy for a long time and haven't really found answers. It's just a quick, easy way to give you that assessment and gives you an idea about whether you need to pursue it further with your practitioner.

Evan H. Hirsch, MD: Great. So a lot so proceeding with the visit, so you have this you believe that somebody has Lyme, you're making a diagnosis. And then in terms of treatment, it sounds like you kind of you have knowledge of both the the Western stuff the antibiotics that have been done, as well as the herbs, as you mentioned, the herbal stuff is better in many studies, I wonder if you can talk a little bit about that and what you're looking for in treatment or what you like to use for treatment?

Darin Ingels, ND, FAAEM: Well my approach to treatments really a whole person approach. And I think this is where I think we can disagree with Infectious Disease doctors where they want to go in with the sledgehammer, just kill the bug, kill the bug. First of all, we actually have no evidence that you completely eradicate it 100%. I think there's pretty good evidence that you get it under control, but it may not be completely eradicated. It's kind of like Epstein-barr virus or some of these things were at once you get exposure, it's part of you your whole life, but you learn to manage it, your immune system keeps it in check, and it really doesn't bother you. But it's not just about killing the bug you really have to look at the whole person, you have to look at the terrain. And so when I wrote my book, again, applying what I had really done to myself, we kind of had to look at everything going on the person and so, we really start with gut health, because the gut accounts for up to 80% of your immune function.

So if your guts not functioning well, you're gonna have a hard time managing any kind of infection, whether it's chronic or not. So it's always looking at you know, how well do you move your your bowels, do you have healthy digestion, you go to the bathroom as frequently as you should, you have IBS, you have Crohn's disease. And all these play a significant role in how well your immune system is going to function. So now, first thing we talked about is just know how well is your gut functioning, that's really kind of step

one. And then step two is looking at diet, obviously, what you put in your mouth has a huge impact on what happens with the gut. So it's really about eating a specific way that I talked about, which is an alkaline diet. And if you want to talk more about that, I'm happy to do that.

But it's really about eating a mostly plant based diet to really start driving your cellular pH because we know that your with the exception of your skin, your stomach, your bladder, and for women, the vaginal area which are very acidic to protect against outside invaders, the rest of your body pretty much functions in an alkaline state. So when you eat certain foods as they break down, they will dispose your tissues and your cells to be more alkaline, which gives each cell the better opportunity to function the way it's supposed to. Enzymes work better, cell repair works better, and so forth. So it's really getting people start to shift their diet so that it's working for you instead of against you. And then as we get into, part three, which is really now how do we treat the act of infection?

Again there are fortunately many herbal protocols out there that I've used that I've been successful with, unfortunate when it comes to research, there's not big money behind it to do large scale studies. So a lot of this is clinical experience and observation. There is a woman out of the University of New Haven, Dr. Eva Sapi. She herself got Lyme disease, of course, living in Connecticut. And she became very motivated to start studying how herbs impact Lyme disease, and so she published a few initial studies looking at herbs like cat's claw, banderol, kumanda these are herbs that come out of South America and she found that they were more effective in vitro than either doxycycline or rifampin, which are commonly used to treat Lyme.

And then Johns Hopkins actually just published a report earlier this year looking I think, 17 different herbal extracts. And out of the 17, I think 10 or 12 of them were shown to be very effective against Lyme disease. So again, we've got some preliminary good, at least in vitro research showing that these herbs can be as or more effective than the antibiotics. Also, knowing that we're going to get less impact on the microbiome. It doesn't seem to kill off your gut bugs as much as the antibiotics do. We don't damage the mitochondria. And with herbs, they do a lot of different things. Herbs can have up to hundred or more different constituents that have different biological activity.

So as we're doing combinations of herbs, not only are we targeting active infection, we're helping reduce inflammation, or improving blood flow or approving adrenal function. So, we've got the ability to really mix and match for each individual person to find which combination is going to really address the totality of everything they're dealing with. And that's, I think, one of the beauty of herbs is that we have that ability to kind of play chemist, and find out the right combination that works for each person. But there are probably seven or eight different herbal protocols that I've used with different patients. And again, we just keep fine tuning it with each person.

But the overwhelming majority of people I work with respond quite well to the herbs. Sometimes it's very quickly, sometimes it's slowly again, everyone's different, but as long as we're seeing improvement or symptoms, we know we're headed on the right track. So

getting that herbal protocol in place is that third step. The fourth step is really just looking at environment. There's so many things in our environment that undermine our immune system and whether it's exposure to toxic chemicals, something you're putting on your skin, chemicals you use around the home, something like Roundup, which we know Glyphosate is extremely toxic. So it's just taking stock of what do you put in you, on you around you, that may be undermining your health. And this is where I also talk a lot about mold.

Mold exposure, and micro toxicity is the one thing that probably mimics Lyme disease the closest. Only if you wrote down the symptoms of micro toxicity, and Lyme disease is probably an 80-85% overlap. So one of the first things I do with my patients is we test for Micro toxicity right off the bat, because they're so similar and pretty much anywhere you live, at least in the United States. There's mold somewhere. If you live in an area with a high humidity, you're going to get a little bit more mold. Of course, if you live in Seattle where it rains all the time, you're gonna get more mold, but I was surprised because I lived in Connecticut for 18 years and I was expecting mold because my town was 400 years old, there was old buildings, you would imagine some point they leaked.

And then I moved out to Southern California where it's a dry climate, we're mostly desert. And I've seen more mold problems here than I ever did in Connecticut. And a lot of it probably has to do the construction is that they don't build houses here to tolerate moisture, because we don't get a lot of it. So when it does rain, or when we do get moisture, these houses just become sieves for water. And therefore, mold tends to grow and people just aren't aware of it. So-

Evan H. Hirsch, MD: Yes, go ahead.

Darin Ingels, ND, FAAEM: -yes, so just making sure they know people are aware if they've ever had any kind of water damage, or if they're not concerned, you'll get your home tested. If it's a workplace or your child school environment, it's good to know where that mold exposure might be coming from, because again, that's going to take you down a very different treatment path. So again, looking at all those environmental factors is important. And then the fifth step that kind of walked through people is just all the lifestyle factors that you can do that's going to help you move forward. So that's ensuring you're getting good sleep. When You get that deep restorative sleep, that's when your tissue repairs, that's when your brain detoxifies. All that good work happens when you're getting good sleep.

And so many Lyme patients and tick borne patients have sleep problems. And so when you're not sleeping well, you're also going to be more tired. [laughing] There's no mystery there. So the more we can help people get better quality sleep, then we know that's going to help improve their tissue repair and their energy during the day. And then getting movement, which is bad as I felt, when I was in the throes of Lyme, I would plop in front of the couch, and I would at least try and stretch. That was the most I can do and it didn't feel like much, but it was better than doing nothing. And over time, then I started walking and I did laps around the block and eventually again, got to a point

where I could study martial arts so do what you can, but doing something's better than doing nothing.

And I won't even say exercise I'll say movement. Because exercise for some people is just so overwhelming when you're so tired and achy, that that seems impossible, but getting a body to move in whatever way you can, can be very helpful because it still moves your blood, moves your limp that helps your immune system. And then the last part again, we kind of touched on mindset. But I think having that, that outlet to deal with stress to deal with, family issues. When you are chronically ill, it brings up all sorts of emotional things that may be hard for you to deal with on your own. So whether it's being part of a group, working with a therapist, again, there's no number ways that you can manage it. But helping people manage their stress, manage their chronic illness, having those resources in place is really helpful to just help the mental and emotional part of our being.

And it ties into the mindset stuff that we talked at the beginning of our discussion today. But again, the mind, the body can't be separate. We have to treat them all together. And again, when we apply all these different steps, I feel like we're really covering the basis of all these different things that really help people get well.

Evan H. Hirsch, MD: Yes thanks for walking us through that. And I highly recommend people to check out your book that takes you through takes him through that five step process. Sounds very powerful. So questions around that as you were speaking, the first one is about lifestyle habits. So you have lifestyle habits at number five. So tell me a little bit why it's not number one.

Darin Ingels, ND, FAAEM: Well, there was really no specific reason I think it was when I was my own process having come off and on antibiotics, my gut was now disaster. And I realized that was the first thing I had to take care of before I was going to get well. And so as I applied what I did for myself, everyone else that was really kind of the first thing that came up. It could very easily be put number one, I mean, again, I in reality, I mean, we talked about these five steps. It's not like we're doing step one, and then one, step one is done, then we do step two, in reality, we're kind of doing all these steps at the same time. So these are really parallel steps not sequential. So I'm talking with patients about all this as we go through their process. But I think with each person and again, this is very individual, and if we identify that their primary problem is stress, and their gut function is doing well, that's going to be the priority.

So this is where, again, it gets to be very individual. And again, I mean, I tried to write a book that we could apply to the population as a whole with understanding that everyone's different. So in my own private practice, again this is where we sit down, identify, what are the big obstacles right now? What are the things that are holding you back? Where do we really need to target first, and that we will address all these steps at some point, but I have some people come in whose guts are perfectly fine. They have regular healthy bowel movements, no problems there. So that's not where I need to spend my initial focus. But maybe they have a lot of stress in their life. They're going through a divorce or whatever it is, and that's where we really need to focus our energy.

So with each of these steps, it's really about meeting each person where they're at and make sure that those needs are met first.

Evan H. Hirsch, MD: That's great. And part of the reason why I was asking is because I've had somebody asked me the same question because I don't talk about lifestyle habits until we've already done a number of different things. And part of that is because, number one, most of the people that I see is probably with you as well. They've done a lot of lifestyle habits.

Darin Ingels, ND, FAAEM: Right.

Evan H. Hirsch, MD: They've already worked with a lot of other people. And they've worked on sleep and eating enough water or drinking enough water and getting good food and all that sort of stuff. The other thing too, is that I find that you have to start making some shifts, initially, and for people to feel better before they can actually engage in some of those lifestyle habits, because sometimes they don't even have the energy to change their diet if they have to. So yes, so those are some of the things I've seen as well.

Darin Ingels, ND, FAAEM: Yes, I think I've had the same experience and again, when people are overwhelmed and most of my patients are when they come in because they just physically feel so terrible. If we can get them physically feeling better, then it's easier for them to work on more of their mental emotional stuff, because now they just have some symptomatic relief. And that's kind of not weighing on their mind as much. But again, everyone's a little bit different. And we just have to meet people where they're at.

Evan H. Hirsch, MD: Right. So something else that you had said about step one about healing the gut, made me curious. So if someone has an infection that's in the gut, whether it's a bacteria or yeast or even a parasite, and then they also have Lyme, which one do you go after first?

Darin Ingels, ND, FAAEM: Well, the reality is we go after both. I mean, again, ideally, I like to do stool testing to see if they've got another type of infection that we're unaware of. I think it's a very easy way and not terribly expensive to try and identify is there some other overgrowth of yeast as an overgrowth of other bacteria? Yes, is there some occult parasite we didn't know about. So as much information as we can get, then we can again, really target our treatment a little bit better. So, again, if that's a possibility for people to have that evaluation, I find it tremendously helpful. If it's not available for whatever reason, then we're really kind of treating based on symptoms and there's certainly a lot we can do on that.

But I think most of us prefer to have solid information because I hate for people to spend time and money on a treatment that's really not directed at what we need to. And I hate guessing and again, being a Microbiologist, it's like, I like to know exactly what bugs I'm dealing with, because I know which treatment is going to be better suited for that particular organism. And I just don't like shooting in the dark. So [laughing]

Evan H. Hirsch, MD: No, I agree. We always have to combine our subjective and our objective data, right?

Darin Ingels, ND, FAAEM: Yes.

Evan H. Hirsch, MD: Yes.

Darin Ingels, ND, FAAEM: Again, for someone who did stool testing for five years, I mean, I've looked at a lot of poop and [laughing] I've been under an electron microscope. I did parasitology, I spent hundreds of hours scouring for parasites and I know it's a from the lab standpoint, and it's a lot of labor intensive work. But again, as a clinician, it's important for us to understand what's going on in the microbiome. And there are new tests coming out something like viome. That's looking really at the totality of your entire microbiome, and I don't think we're quite there yet. Because we don't really understand yet what is normal? I mean, how many people out there have never taken an antibiotic, if even, you know, clean, organic food their whole life? It's a pretty small number.

So I think we're just scratching the surface of what a healthy microbiome should look like. But as this information continues to evolve, I think at some point that will provide us with a lot of really useful information on what else can we do to help get the gut microbiome back to where it should be?

Evan H. Hirsch, MD: I'm picturing you digging in poop. And I'm thinking about our current situation. We actually are fostering kittens, and they're now three weeks old, and a couple of them we're constipated. And so there's a big focus right now in my family around getting these kittens to poop and how important [laughing] is our applauding every time? Something's coming out so it's such an important part of our health, right? And I'm reminded, we're keeping spreadsheets of all their like, are they peeing? Are they pooping? What are they eating? You know, all these things, which people forget are they think of is so basic, are so important for determining how healthy we are.

Darin Ingels, ND, FAAEM: Well our elimination pathways. I mean, I didn't really mention earlier I should have our elimination pathways are huge and getting well I mean, your ability to detoxify. When we obviously we are designed to detoxify that's built into our liver and our kidneys. And that's why we sweat, but I find that a lot of people who are chronically ill, a lot of those pathways don't work the way they're supposed to. So often at some point, we have to intervene to help them get them to sweat more, or get them to eliminate more through their bowels and get their liver functioning better. Get their kidneys eliminating more. So you mentioned earlier like, hydration is just a huge part of getting people to eliminate normally because you're gonna pee out more stuff and then ultimately it helps with your bowel movements, particularly if you're on the constipated side.

So make sure that you're well hydrated is terribly important. But we've got a lot of different strategies that we can implement to help improve people's detox pathways.

And it's so interesting, I think, I've always been perplexed why the conventional medical communities really kind of poopoo this whole idea of detoxification, you don't need to do anything, your body's already built to do it. Like right, but we've learned so much about epigenetic expression of different liver pathways that some people just don't detoxify well, and for me, in my practice, my litmus test is coffee. For the person who drinks one sip of coffee and they get heart palpitations and diarrhea and they feel like, they're all jacked up, and the person who can drink a pot of coffee and they feel nothing.

I mean, that's a pretty good idea about how well your liver metabolizes caffeine. If you're very rapid metabolizer, coffee doesn't bother you. You're very, very poor metabolizer a little bit bothers you a lot. So I mean, even something like that can give us a pretty good idea about how well you're going to process other things, whether it's medications, supplements, herbs, and I think that's very useful to know. So again, you can tailor your treatments, you don't want to blow someone out of the water, if they're really not detoxifying well, by overloading them with a lot of herbs and supplements, because they're probably not going to process them very well, and it might backfire. So that information can be very helpful as well.

Evan H. Hirsch, MD: Yes. Like to say slow and steady wins the race.

Darin Ingels, ND, FAAEM: Absolutely. It's a marathon, not a sprint.

Evan H. Hirsch, MD: Right. People are in a rush to get better. And I tell them, I say I want you to get better yesterday. But yes, it's a marathon, not a sprint. So let's talk a little bit about that. So you start a therapy for somebody and they start having die-off. Do you have any favorite tools for and tell us kind of what is die-off? What is the Herxheimer reaction as well?

Darin Ingels, ND, FAAEM: Yes, so the Herxheimer reaction, I mean, we also caught herxing for short is a combination of things no part of it is it's your immune response to the organism. And that cytokine response that's part of your immune system can make you feel like they're basically flu-like symptoms. You can feel more tired, more achy, nauseous. The other part of it is that as the organism breaks apart, the organism itself contains certain toxins that will bother you. So the combination of your immune response plus the organisms breaking up causes this herxing reaction. So when people get it, we've got a lot of different strategies to mitigate it. So part of it we do through herbal medicine, there's a lot of herbs again, that basically help promote better detoxification.

So your body's ability to clear those toxins out faster will make that reaction less. I'm also found that using alkalizing agents are very helpful in mitigating that so there's products out there like Alka-Seltzer Gold is not the same as Alka-Seltzer, plop plop, fizz fizz, but Alka-Seltzer Gold's a combination of sodium and potassium bicarbonate. And we know the path potassium bicarbonate is a very effective substance to help alkalize your body. And so by shifting your body pH more alkaline, it reduces your disposition to being allergic and it reduces your disposition to having this die-off reaction. And people can take it every couple of hours until they start to feel well.

There's also another product out there I use a lot called Try Salts. It's a combination of sodium potassium and calcium carbonate. So very similar to the Alka-Seltzer Gold, and again, you can find it online and it's really inexpensive and you just mix it into your water, and drink it every couple of hours. So those are the ways I found best. And again, there are some very specific herbs too. There's one called combination of Burbur and Pinella made by Nutramedix that works really well. Dr. Zhang has a formula called AIM, which is an anti-inflammatory formula. So depending on what protocol people are on, often we can increase those parts that improve the detoxification. And between all that usually people will get to the herx reactions in a shorter period of time, less intense, and then on the back of it back into that reaction, usually they feel a lot better.

Evan H. Hirsch, MD: That's great. Those are really great tips. And so what do you think? What do you say to those people who are like, well, I'm just going to power through it?

Darin Ingels, ND, FAAEM: Why? [laughing] Why suffer? Yes you know, I don't think it there's no badge of honor and powering through it. It's just it happens. Now, very interestingly, I never ever herxing. Nine months of antibiotics and however many months I did have herbs. I never had the die-off reaction, fortunately, but a lot of my patients do experience it. But again, there's no benefit of powering through it. Helping your body get through it, the end result can still be the same. And often when people get on the back end of herx, they do feel a lot better. And to be very clear, because I think this comes up as a point of confusion for a lot of people.

I see patients who come and say tell me, "I've been on this herbal protocol or I've been on these antibiotics for, you know, three months, and I've been herxing for three months." That's not a herx reaction. A true herx reaction probably lasts seven to 10 days ish. And on the back end, you should feel better. If you've been feeling terrible for three weeks, four weeks, two months, that's you having a reaction to whatever it is that you're taking. So it's important to tell that to your provider, because if you've been herxing for two months, you're having a bad reaction to whatever you're taking, and they need to change your treatment.

Evan H. Hirsch, MD: That makes sense. So how do we, got a couple minutes left, couple more questions, how do co-infections fit into this picture?

Darin Ingels, ND, FAAEM: Well, the co-infections can change the picture a little bit because they can trigger different symptoms. So for example, Bartonella, which is a very common one, especially up in New England, I think the studies show up to 33% of these ticks that carry Lyme also carry Bartonella so with Bartonella you can get these flex like stretch marks on your torso. The big difference is that there's been no change in your way, they get very dark purple discoloration and they tend to go against the grain of your skin folds. So like stretch marks will follow you the normal curves of your skin folds. And with Bartonella you'll see them go in the complete opposite direction, but they can curl on the torso on the hips, on the thighs sometimes up on the shoulders. So that's a sign of Bartonella.

Bartonella also causes burning kind of neuropathy. So you feel like you always have a second degree burn often happens in the legs the feet. So when we see these individual co-affectations or Bibisea, Bibisea is a blood parasite, it will cause cyclical fevers. It is a cousin of malaria. So it almost has a malaria-ish kind of look to it. So when we understand that there's these different co-infections, again, it does change a little bit about the type of herbs that I would use to target those specific things. And also, again, gives us different biomarker to measure how you're doing. Fortunately, with a lot of the herbs we use to treat Lyme, they do cover a lot of the co-infections. When you're using antibiotics, you have to be very specific about what organism you're treating.

Again, there is some overlap, but it's much more specific in the antibiotic world. But with the herbs, there is a lot of overlap. But we do know there are certain herbal formulas that work better for Bartonella, work better for Bibisea, work better for Mycoplasma. So again, often will make those adjustments if we know that co-infections are part of the picture.

Evan H. Hirsch, MD: Interesting. And so I've also heard I haven't really seen this, but I've also heard that sometimes symptoms associated with each one of those co-infections will flip depending on where you are in the country or where you are in the world where sometimes Bibisea will look like Bartonella and vice versa. Have you heard that or seen that?

Darin Ingels, ND, FAAEM: Well, not that per se but we do know that like for Lyme, the Lyme in Europe is a different strain. So the Borrelia there is different the Borrelia here and it does manifest different. So if you do get exposed to different strains, different organisms, yes, depending on the world, the presentation can be different. I can't say I've seen where Babesia looks like Bartonella and vice versa. There can be variations of how Bartonella affects people that can be very help Bibisea effects people, but not in the way that I think you've quite described it. But yes, I mean, I've had patients that as far as we can tell, and even from testing, know that their exposure came when they were traveling in Europe.

So they'll test positive for the Borrelia strain that's found in Europe and not the US strain. So if they had just done the regular test here in the US, their test probably would have come back negative anyway, because we're looking at the wrong thing. And we know there's about 100 different strains of Borrelia in the US and 300 strains worldwide. We think there's probably about eight of them that are clinically relevant eight or 10. But again, we're still trying to figure out outside of Borrelia burgdorferi which is the more prominent one in the United States. There are definitely several others that are tributing to Lyme disease.

Evan H. Hirsch, MD: Okay, so I think last question, how is your approach to treating Lyme disease different than other doctors?

Darin Ingels, ND, FAAEM: Well, I think as I mentioned earlier I think the biggest difference is that we have to look at the whole person. It's not really just about going in

killing the bug with a sledgehammer, we have to look at everything impacts your life, everything impacts your immune system. Are you a highly stressed person with a lot of allergies, and you smoke a pack of cigarettes a day? Are you someone who is been very healthy, you exercise a lot, you already eat a clean diet? Being able to look at the individual and really tailor the treatment to their individual needs. I think that's what makes it a little bit different. I think in the conventional infectious disease world, everyone gets the same treatment, and they don't really affect and dress any of these other factors that we know have a huge impact on your immune function.

Again, it's really about treating the terrain ultimately, how do we get people healthy? It's not as much about treating Lyme disease as is getting people healthy. Yes, actively treating Lyme is part of it. But if you look at the thing I think that has the bigger impact is know all these other factors in terms of gut function and diet and sleep. And as we get people healthy that's what's really where the healing happens. I had to laugh. I mean, I wrote my book, and I've read Amy Myers book, I've read your book, I've read Terry Wahls book, we all wrote the same book. [laughing] And it's basically you got to take care of yourself, you got to eat good food, you got to get good sleep, you got to move your body. I mean, I think the fundamental principles that we're all preaching is pretty much the same.

And so as we're working with our individual patients, we're working on how do we get people, taken care of all these factors to give their body the chance to do what it's designed to do. I mean, it is built into our DNA to heal. We just got to give it the opportunity do that and remove those obstacles again the way. So I think that's really the big difference. But I think the way I approach Lyme is the same way you approach fatigue, which is the same way Dr. Wahls approaches MS and so forth like we're just looking at the whole person, and how do we get them healthy so that they can overcome whatever illness they're battling?

Evan H. Hirsch, MD: Yes. I just love your perspective. And I can see why you're so successful with folks.

Darin Ingels, ND, FAAEM: Thank you.

Evan H. Hirsch, MD: Yes. So great. So tell us where people can find you. What is your website?

Darin Ingels, MD 23:32

Darin Ingels, ND, FAAEM: Yes, so my website, just my name, it's dariningelsnd.com and I'm sure you'll put the spelling in the notes for folks because that's where a lot of people get messed up. But we'd love for people to sign up, I've got a free gift for people. If you sign up, we're going to send you my top 10 immune boosting recipes, which tastes fantastic. They're really easy to make. I'm a very simple cook. So I like things I can make really quickly and easily and these are all them. So we'd love to for you to get that download. And also I wanted to share with people that I have a course coming up the launch this November on how to overcome chronic infection.

And we're going to take people through an eight module course of how to help identify these and then all the different things you can do to help support you so that you can overcome being chronically sick, chronically tired, for people who are getting chronic strep throat, chronic bronchitis, chronic sinus infections. There is a way that you can stop feeling so miserable and feel well again, so we'd love to invite people to the course we have not yet developed the webpage for that yet, but if you're interested, please come to the my website, sign up for my email list and then we'll send out an announcement as soon as we have that ready to launch.

Evan H. Hirsch, MD: Excellent. Yes, we'll definitely put that information in the show notes. Darin, thanks so much for being on with me today. I think you dropped a ton of knowledge. I think you provided a ton of value to our listeners. I just really appreciate the wonderful work that you're doing.

Darin Ingels, ND, FAAEM: Oh, thanks for having me Evan it was my absolute pleasure.

Evan H. Hirsch, MD: I hope you learned something on today's podcast. If you did, please share it with your friends and family and leave us a five-star review on iTunes. It's really helpful for getting this information out to more fatigue people desperately needed. Sharing all the experts I know and love and the powerful tips I have on fatigue is one of my absolute favorite things to do. If you'd like more information, please sign up for my newsletter, where I share all important facts and information about fatigue from the foods and supplements to the programs and products that I use personally and recommend to others so that they can live their best lives.

Just go to fixyourfatigue.com/newsletter to sign up, and I will send you this great information. Thanks for being part of my community. Just a reminder, this podcast is for educational purposes only and is not a substitute for professional care by a doctor or other qualified medical professional. It is provided with the understanding that it does not constitute medical or other professional advice or services.

If you're looking for help with your fatigue, you can visit my website and work with us at fixyourfatigue.com and remember, it's important that you have someone in your corner who is a credentialed healthcare professional to help you make changes. This is very important and especially when it comes to your health. Thanks for listening, and have an amazing day.