Biofilms, Co-Infections & Hidden Pathogens: What Your Lyme Labs Aren't Telling You Transcript

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Introduction and Guest Background

Hello everyone. My name is Doctor Richard Horowitz and I am the co-host of the Doctor Talk Healing Lyme Summit 2.0. And it is my great pleasure to introduce to you a good friend of mine for a very, very long time, Doctor Steven Harris.

Steve, thank you so much for joining us today. We're going to be discussing lab testing in chronic Lyme and tick borne disorders. And some integrate of strategies.

So again Steve, thank you for taking time out of your busy schedule. Thank you for inviting me. Yeah, sure. So Steve, why don't you tell I think a lot of people actually know who you are, but why don't you just tell people a little bit about yourself and kind of how you got into this?

Right. So I'm a family medicine doctor, and I've been in practice now for nearly 25 years working in, Lyme and chronic infection and now chronic complex illness space.

My father, Nick Harris, started a lab called. I, and, I, so I, I was an employee with him for a while. I've done research with them. Got to hear really, from the beginning, when people like you and Joe Schiano, we're seeing some of these patients early on, kind of hearing from my dad's point of view when I was still even pre-medical school.

What, patients and doctors were experiencing for how to approach these, these new, this new cohort of patients. So I've been involved in the Lyme world, and, and the lab world peripherally for, for quite some time now.

Right. And you've been, you've been working kind of peripherally with high jinks. Now, even though your dad passed. And so, by the way, for those of you who did not have the great pleasure of knowing that, Chris, I just have to tell you, Nick was one of the most generous, kind, warm hearted people I ever met.

And and of course, smart. Nick was one of the founding members of Islands with myself and Joe, Boris Garneau and Steve Phillips, Andrea Gatto, Terry McKnight, we were all there from the beginning.

Nick rented out a space in New York City. It was a hotel room, was like on the 16th floor somewhere, this little room. And we're signing documents, starting islands, and every year.

And you know this, Steve, from his generosity, he would support islands. He would take everyone out to dinner. He would make sure that, islands had whatever the, the finances they need to keep going forward.

I mean, really, if it wasn't for your dad, I'm not sure I, I Lance would be in the situation. It's in here. So I just want you to give him a shout out wherever Nick is right now.

Hopefully he's driving his Maserati someplace in, in the Pure Lands, but, hopefully. I just wanted to give him a shout out because he was just such a wonderful person.

And and, of course, I had the great pleasure of knowing you and your mom and your whole family for many years, so. Yeah. Right. Yeah. So I'm. Yeah, you're working perfectly now with high jinks, helping a little bit with lab testing.

Correct. Right. So, so I work with that idea as one of their clinical consultants. I use lots of labs. Besides, I, I do, I do quite a bit of Lyme testing and co-infection testing and, and so, I, I approach the patients, in several different ways, with, with various labs.

So, knowing full well that, that Lyme disease, at least as a clinical diagnosis, the labs are meant to support a clinical diagnosis. But by themselves, are not meant diagnostically.

Right. And, of course, the great news for genetics is you recently got FDA approval, right, for the immuno blat, for the home testing with the, with the Lyme immuno blot.

So that's that's really great. And of course, I started using my genetics. My. Got it, I don't know, was it 20, 25 years ago? I mean, I discovered but BCA New York State really thanks to Johnson and Nick.

Right. With the BBC fish test before anyone was saying it was really there. Now, of course we have the BBC immuno blot, the live immuno plat, the relapsing fever immuno blot, the Bartonella immuno blot.

So talk a little bit about that, Steve, about when you when you have a patient that you're seeing for the first time or who's got ongoing symptoms. How do you look at those lab tests?

What's the panel of tests you like? And then we'll talk a little bit about interpretations of those lab tests. Right. Well, it's, the approach is not as straightforward as it might seem, partially because, a lot of patients, by the time they get to me, by the time they get to you and some of the, you know, these other other docs who have been in this space for a long time, a lot of them are coming in self-selected, right.

They've been, diagnosed or they've gone through several iterations.

Lyme Testing Strategy and Direct Detection

And so a lot of times, Lyme, they come to Lyme often by default after having looked at many things. So, so there's two different groups of people, at least, you know, one group who come in with a huge constellation of symptoms.

I'm going to look at Lyme and co-infections as part of an overall workup, mostly because, you know, I do have to play devil's advocate because I want to make sure I don't miss anything key.

I don't want to miss cancers. I don't want to miss autoimmunity, I don't want to miss other infections. And so I'm not just when patients come in and they haven't had a whole battery of testing, I am going to look, try and find as many things.

But there's so many, differential diagnoses that we have to consider, such as lupus, but such as parathyroid issues such as other hormonal issues. So, so with these patients, I really want to take a very broad view and perspective of what I'm looking at.

So we'll get to those maybe later. But if we have someone and I'm really trying to focus on Lyme and other tick borne infections, I think about it in a few ways.

The partially it's financial, because, there is a somewhat of a debate in, the, the Lyme world about do the co-infections have a real clinical significance in the absence of a Borelli infection?

Right. And so there's many doctors who feel that they do. I find more that Lyme I look at as one of the drivers of these co-infections, that many of them are actually Cohen infections and that were someone infected with a Berbizier especially like a Berbizier, my Crotty, maybe not a colleague.

And and doing canny but some of the the Bayesian factions may not have as much clinical significance in the absence of something driving that, whether it's because it's lowering complement or it's having other immune effects that's making Berbizier, a thing by itself, same, same, issue with, some of the rickettsia infections and with, with even Bartonella.

Now, we do see, of course, cases where people may have Bartonella, whether it's from a cat scratch or even a tick bite. And they are quite symptomatic and we don't actually find Lyme sometimes we so still suspect that there's

Lyme, but, I do find that in by and large, I really want to see if if Borrelia infections Lyme, primarily is at play here and I and so I do discuss this with patients.

But a lot of times I'm going to try to find Lyme first, and then if I find a positive, Borrelli infection or if I, if clinically if it fits, then I'll go back and do co-infections.

So sometimes I'll split it up. Now some people want to come in and and it it is a question really I think of time versus money. If you're going to be doing all testing at once or if you're going to start with Borrelia first, because sure, you can save money on, not doing a lot of these extended panels.

But in a practical world, if I have someone and they have Lyme and they have babies who may have Bartonella, I'm typically going to treat but be easier Bartonella before I really engage in a lot of Lyme treatment.

That being said, I will, I will often present it with the patient of my logic of why I just testing for Lyme first. And then in other cases when, when it makes sense to, to look at all of the infections together, then I'll do that.

So the way to think about Lyme testing for Borrelia testing, at least there's indirect testing and there's direct testing. Direct testing is the the clearest way to, to see if the acute is present or pieces of the spider kid is present.

Culture being the the most effective and best way to to to find the organism culture is obviously a very difficult process. It's been, rife with problems.

And so culture is still not perfect. There's definitely been some headway into culture, but, so one of the best things that we have is PCR, looking at DNA, another way that is being developed is RNA or fish, which would the fish testing would fluoresce topic in situ hybridization, long term for saying that you can see the RNA under a microscope.

That's the RNA tagged to to a marker, and that you can actually visualize, the pieces of the RNA in the organism. And then at least you know that the, the organism is, is somewhat active or at least fully present, because there's the idea that if you only find DNA, that there is often a criticism that people could have positive PCR, in even in the absence of an active infection.

Now, I don't truly believe, but I think the body does a pretty good job in eliminating DNA. Pretty quickly. If it's, if there's no organism that's active and attached to it.

But but it is one of the criticisms of PCR testing, that there may not be live organism. So, but but I still think that that when you find a PCR positive or a fish positive or cultured positive, that you really know there's an organism there.

And the other and the other direct testing, Steve, you're an antigen testing, right? I used to do the Lyme. You're an antigen testing, but there's other antigen testing using the 31.

Right. That that other people will use. Also. So I mean, do you find you use that test at all with the urine antigen testing? Of course. And thank you for reminding me, because I do think it, in the past, it was probably one of the most important tests, that I did.

I don't use that as, up upfront test. And I'll explain why in a moment, but, but the, the urine antigen testing, the idea behind it is that these spider kits, that they have several proteins on their surface, and called antigens in this case.

And antigens are usually what our immune system responds to. And so they have there's different antigens on, on the surface, the antigens themselves, we can often detect in the urine.

And then there's, there's been testing, way back when I think, Steve Shooter was doing some work, for, for years, I had done has done some amazing work.

There's some newer testing now that's looking at Lyme urine antigen with some, some new, some new labs. And

so it's still is, is quite exciting, especially when we know that that Borrelia really, has a propensity to infect the bladder.

It's sometimes one of the only ways to get it. And it is one of, one of the few ways, that I can be confident after I do a provocation test, especially.

And if I do enough of those urine tests, I can be, I use that that quite, I think quite effectively to help, rule in and sometimes even, you know, partially rule out, the infection.

So, so, yes. Thank you. The urine antigen testing does have, quite a bit of value. Still, I don't use it as much, especially not in the beginning. Use it because, there's so few Borrelia organisms from a from a microbiological standpoint, it's unlike, you know, it's dumber cousin strep anemia that causes syphilis, where almost every cell is infected, but rarely it doesn't have, doesn't infect that many cells.

And so by just checking your urine stat or unprovoked, you could be doing a lot of testing before you hit a positive, maybe even, you know, 2 to 2 for every 20 tests or so, that, that you'll find.

And so if you provoke with an anti-microbial and you strategically time it when you should kill bugs and then and then check the urine, it can be pretty useful.

But it's not it's not always a great, test for initial patients, because giving someone antimicrobials before you really know their body and their history.

I don't often start with, with, heavy antibiotics for, for them, the, and so, so I do think it is an important point, the other form of testing that is the most common, of course, is indirect testing that's looking at your body's response to the presence of the bugs.

So you're in interpreting or interpolating that there's organisms based on one's immune response, to the, the said organisms or to the antigens on, on the organisms by looking either antibodies or, and more recently looking at T cells, looking at a different kind of, of immune cell and seeing if those T cells respond when they're sensitized with, with the organism.

And so there's a lot of ways to, to evaluate that. I think that's really the starting point for most people. I think it's the simplest way to start. For most people, the, the, CDC still, recommends using antibody testing.

They have preferred, the the so-called two tier testing. Where you're looking at the overall quantity of antibodies that one makes to, to the organism.

And then if that, if they if someone makes enough antibodies, then you'll look at, they'll look at the specific or suggest that you look at the specific antibodies.

We've all found over the years, and there's a lot of studies that prove it. Is that, but really does not induce a huge antibody response. So when you're trying to do a quantitative measuring, and in the form of an IFA or an Eliza, or a C6 peptide, even, other than that, in the acute phase, the, that a lot of people don't make enough quantity to even get to that next here the, the western blot and now the immuno blot, which are very similar, but but one actually is the organism, pieces of the organism.

And the other one is looking is using a recombinant form of, of the antigen. To to see if there's an antibody antigen, mixture or binding effect. So the the initial screening test, it is one of these crazy situations where the screening test is less sensitive than the confirmatory test.

And so the whole point of a screening test is to have too many positives and then not. And then what you do is with all those too many positives, then you find which one of those true, those positives are true positives.

This is backwards because the that test, it really seems to to stop before people get to that that second

confirmatory test. And so, so many people are being missed and and this is just, this is Lyme and I 101 is that there are so many people who are not getting the proper testing because of the way that that this was dealt with back since 1996, you know, at a conference in Michigan, where they decided that two tier testing was what they were going to use.

Now, you know, as you know, the intent of that was for state funding to see what the survey to to do, surveillance testing, to see how many new cases would be found in each state.

They were care. All they cared about were incident cases or new cases. And in new cases you may not miss as many. And they didn't care about the prevalence of line.

They cared about how many new cases and based on how many new cases, how much funding should every state get to to address Lyme disease and how much of an infrastructure should be created.

So the the whole point of that two tiered testing was not meant to help with diagnosis. It was help to create a baseline roughly idea of surveillance case cases and.

Right. So you bring up some important points Steve. So you said it early and just I'm going to just kind of sum this up for people who are listening. You're listening to Doctor Steven Harris, who has been in the line world for the last 25 years, grew up with one of probably the best immunologists in the world for Lyme is is Nick Harris.

And what we're discussing today is that Lyme is a clinical diagnosis. Using the testing base to confirm that diagnosis. There's indirect testing like I have phase immunofluorescence antibodies, Eliza C6, Eliza the C6 Eliza by the way.

And I'll, I'll just fill in some gaps here. It checks for at least three strains Borrelia burgdorferi sensu strict two but also Borrelia. Absolutely really agree nine which are European strains, which we are finding now.

But the C6 also overlaps hard tick relapsing fever, beryllium Miyamoto eye disease. So you will see some cross-reactivity. And the Eliza's you're not always going to pick it up.

Steve was describing earlier that when you do the two tier testing that health departments use to epidemiologically screened large populations, you're going to miss.

It's a coin flip. You're missing about a little over 50%. 50% of those patients will be missed.

Indirect Testing, Immunoblots, and Interpretation

And that's why we have to use other testing. And we were describing, direct testing, whether it's by PCR, DNA, fish testing, culture testing, urine antigen testing.

We didn't go into phage testing. We can discuss that in a bit. From Red labs about some doctors will use it, but but actually, what I do at this point and going back to clinical diagnosis is we developed our questionnaire and published it with New Paltz researchers in 2017 and 1600 people from three medical practices.

So we give people the HMC, the the Horowitz M6 questionnaire, which was based on Joe Boris Garner's work. We score it and we look to see if they have good and bad days with symptoms coming and going with migratory pain, because migratory pain is the hallmark of Lyme, migratory muscle pain, joint pain and nerve pain being actually the only disease that we know of that really causes it.

And then if questions one and 22 are positive fevers, sweats, day sweats, night sweats, chills, flushing, air hunger, we suspect. But BCA now, what Steve didn't get to yet is in clinical practice.

Once I look at that and I see, oh you score high in the questionnaire. Over 63 is two standard deviations above the mean. You've got a multi systemic illness.

You rule out other diseases. Very important point that Steve was making earlier. You have to do a differential diagnosis to rule out other diseases. But I will go if people can afford to do the immuno blot from my Gen-X, I will start off with an IG mg because it's recombinant DNA.

All I need I play the game Lyme bingo, which is, if any one of those bands on the immuno blot 23 usb-C, 31 Usb-a 34, USB 39, 83 slash 93 is positive. I know you've been exposed to a Borrelia species, and the problem with a Western blot, if you do it through the local labs, it's totally checking one strain, and the 31 can overlap other diseases like Epstein-Barr and other viruses and autoimmunity.

So in a in a simplified world, once those other diseases have been ruled out and you've got migratory pain scoring high in the HMC, which you can find on our website, can get better Dicom and you can download it and take it.

Our first test is actually the I jinx immuno IgG MiG. And you're right, Steve. I mean, it can get expensive and I certainly do Tickborne testing through quest LabCorp by reference.

Whatever people might need to do for Erlich year and a plasma Rickettsia, Rocky mountain fever, typhus. Tularemia. We will do those Q fever. We'll do those tests so that people the insurance covers it.

But but fortunately, the hygenic testing, if you just do 1 or 2, it's not that bad, really. And I know they discount the tests, but I do find that the BCA fish test my best test for finding Berbizier.

And I find the Bartonella fish test to be the best test for finding Bartonella. I'll get the immuno blots positive and, Bartonella immuno blots positive.

But, you know, for proving active, as you said, with RNA. And by the way, I agree with you, the PCR for everything I've ever read and I've spoken to lots of doctors about this.

The DNA should be cleared from the system in several days. If you're a PCR positive for hepatitis B or C, nobody's going to tell you you have a false positive PCR for hepatitis, right?

So you got to use the same criteria for libraries you do for, right, other diseases. But I have to say that panel approach, it's made a huge difference for me that, you know, when I've ruled out other causes of sweats and the fish is positive, I know I've got to treat it with things like defend a clean and a Tova Cohn and the rest.

So I just love the panel approach from my Gen-X. And I do use T labs. I find T labs there line PCR there, but PCR a fish they're BBC protocol. I am picking up a PCR call through them and I'm picking up their Bart fish positive in fact confirmatory on I Gen-X.

When people are asking me, well, can we be sure? And it's like I've seen them positive in both. So I r you kind of sometimes having to do that with Steve, but also like using these other tests confirmatory.

You're you're pretty confident with the ones you're. Using a lot. No no I, I use t lab a lot. I use I use hygin x, I use their fish a lot for for the co-infections.

The fish testing is my favorite testing both t lab and antigenic. And so I find that they're the most useful when I need to make decisions about treatment now, and especially if the clinical picture is hazy, like if someone has both Berbizier and Bartonella symptoms that are overlapping, you know, with, with Lyme, then those tests are very important for me, especially when we're deciding on treatments.

As far as, like, are we going to put someone on, you know, on dabs or are we going to put someone on IVF trioxide? Are we going to do this? I really like to know, what the fish is showing me.

So I think that that's very useful. I also do like to be fair, though. I really like infective labs. T-cell testing. I, like I is T-cell testing. I like arm and labs, testing.

And and I like, because that those, those t cells, which are not, they're not necessarily memory cells, but these, these, these form these, these T lymphocytes, when they've recently had exposure to, to the, these organisms, they're going to release their interleukin two.

They're going to, release their, interferon in ways that tell me kind of where we are in the disease process, too. So I do also use those as far as tracking, sometimes tracking disease, I'm not often using them as diagnostics, but once I have a diagnostic established, I think those are really giving me some, real time data where I, where we are in the disease process.

But, you know, to your point, I think that and I talked to doctors a lot about testing for like, what's the one thing I'm going to do for, for Borrelia, you know, for Lyme.

And I'm going to do the immuno blood, I'm going to do the immuno blood AGM and IgG and, you know, which is another important point about this is I think that we all in, in the not all, but I mean, many of us who have been dealing with, with tick borne infections for so long, we really understand and appreciate the importance of a persistent IDM.

And I think it's one of the key hallmarks of this debate about is there a chronic infection versus is a post infectious? It's not that it's the same IGF molecule that we're looking at, years ago, as we are now.

But because of these different proteins that are shown on the surface of the organism at different times of the disease, when the tick is feeding on the Borrelia, there's going to be the, that, antigen, the relay us see, and there's going to be occasionally 39 the BMP.

And then there's going to be, of course, the flagella protein 41, and, and then after six months or so, when it gets into, into our body, our immune system is then going to start recognizing other proteins on the surface of these organisms.

These organisms we're going to switch the 23 is going to be internalized. And we're going to the the those, spiral case will put out that 30W, equates to the 31 the ASP A and the B, the 34, the 83, 93, complex.

So the so when we see an IDM that's positive and it's more than six months after the infection, even years after the infection, and we get, patients saying, well, the doctor said this was a false positive because it was an IDM, especially to your point, after ruling out these other infections like Epstein-Barr, that it's, this IDM is really important because after 3 or 4 months that that organ, that molecule is going to degrade in the liver.

And so if you're still making an IBM, it's because it's being made again, it's looking to the body like a new infection. Well. And Steve, you bring up a great point because that is a big controversy, by the way, among doctors out there about the meaning of GM and and the studies that we've published, we found that 45% of our chronic Lyme disease patients had positive CDC, IDM, Western blots, or immuno blots.

It turns out John Hopkins University, John Alcott, found exactly the same figure, 45%. And the reason for it is that when Borrelia invades the lymph nodes, it gets rid of the part of the lymph nodes that mate with the B-cells that makes IgG antibodies, right.

So you're left with IgG. And some of these patients, in fact, have chronic variable immune deficiency. When they get Lyme and or Bartonella, their immune system gets suppressed.

So some of these people, they don't make enough immunoglobulins. They have subclass deficiency. You can't rely actually even on some of these antibody tests, because they're immune deficient.

And speaking of lab testing, people out there who are listening, you've got to be doing immunoglobulins and subclasses and all of these patients. And because of what long Covid now is doing to the body with T-cell exhaustion, you also should be checking your natural killer cells, your CD8, CD4, CD8 ratios.

These are like really important that we're also now starting to use Radiance diagnostics, to look at their Covid long hauler panel and finding out what kind of chemokines and cytokines are going on, to be able to differentiate what is Lyme, what might be long Covid.

We see a lot of elevated BGF in these patients. Vascular endothelial growth factor, which I have this conversation with Bruce Patterson all the time. You know, is it Covid stimulating the endothelium and inflammation or is it part or is it both.

Right. And we and we just don't know at this point. Right. What it is. But no great point on the exam because that's a big point of contention with many doctors.

Well then the other thing is, is that, you know, we'll I will follow ECGs, of course, but a lot of these folks don't make eye, at least on the West Coast and in central, you know, maybe if they're getting bit by ticks, you know, every few weeks, on the East Coast, of course, then, then maybe they'll be have more brisk, IgG positivity.

But a lot of us are seeing that it's only when patients start getting better that they actually Sarah convert to IgG. So it's, you know, and so when I see patients who are IgG positive, when they're presenting to me in the beginning and they're actively infected, I almost look at that as a favorable sign that, yeah, that your immune system is already aware of this infection.

And so at least it's helping, you know, to, to address what we're dealing with, because most of the time, these folks who are the sickest, they're I guess, or negative or, you know, are almost completely negative.

Absolutely. The sickest patients do not make antibodies. So you're right, when you see somebody who lights up on an IgG, which, by the way, in my world is rare, most of the time it is the IG is not the IgG.

But you're right. I mean, you can follow the bands if you see new Borrelia specific bands over time. That's how you know, the body's still recognizing that right?

The bug is there. So it's again you're not using two tiered criteria of analyzer followed by a Western plot, which is again for epidemiological purposes for health departments.

We're looking at those bands. And by the way, you brought up Dearborn. And I think the people listening out there, many know this, but they took out the 31 inch the 34 band when they put out the Limerick's vaccine because it was going to cause a false positive.

Now the VLA 15 is about to come, right. We're going into phase three clinical trials now for the new, you know, Lyme vaccine. So again, they're not putting it back on.

But you can ask the local labs. You have to ask for it. Ask them to run the entire and give you all the bands. If they're running a Western blot, tell them you want to see all the bands, not to leave out 3134 a lot of times they will not they will not provide it.

I genetics always provides it, right? Yeah. Yeah. Know that it's such an important point that 31 and the 34 are so important in the later Lyme, that if you, if you have a western blot or an amino blot that doesn't include those, those bands, you're going to miss many cases.

Chronic Lyme, and. So lab testing, you know, in general, because this is good, Steve, because we're filling in a gap for doctors talk to talk about this.

You know, when I see patients, you were discussing earlier, you know, how many tubes to draw in people. You could do it intermittently. You know, the joke is I'm.

It's like going to the Red cross when they come to my practice because I'm. I'm draining. I'm probably a half a liter dry by the time I'm done because I'm sending out for.

I prefer getting it all at once. Right. Because I'm doing a CBC and a biochem. A lot of times I'm running Natural Killer cells and CD4, CD8. I'm running the full Tickborne panel locally, right?

Locally. When I when I can do it, I'm running mast cell markers with histamine chroma, and a trip takes prostaglandin D2. Immunoglobulins and subclasses.

I'm running hormones. I'm running sex hormones. Testosterone estrogen, thyroid hormones, posterior pituitary hormones, mineral levels, red blood cell mineral levels.

Right. So it's kind of a very comprehensive when I'm seeing patients for the first time, I'm always thinking the 16 point M6 model that there is six factors that drive inflammation.

I discuss it sometimes like Six Rivers of inflammation going into an ocean of inflammation. And I'm also doing, you know, muscle testing on the first round now because I'm finding so many people are loaded with mycotoxins and I'm doing a DHEA, cortisol, adrenal saliva test, because I'm finding so many people's adrenal glands, I'm doing sitting and standing, blood pressures and pulse rates for ruling out pots.

So, you know, I always think of the M6 model with the testing, making sure that, you know, we looked at mitochondrial dysfunction. Have we looked at all these things.

So do you do a similar kind of lab profile when you're looking at these patients for the first time or they're staying? Well I do, yeah.

Broader Lab Workup and Immune Markers

So I'll do saliva, I'll do blood, I'll do urine, I'll do urine for organic acids, I'll do urine sometimes for metals, and and, and for mycotoxins, of course, depending on the patients, I'll sometimes do blood for Cunningham panels where I'm looking at neuroinflammation, you know, which has the tubulin and Cam kinase antibodies and anti-doping mean one and two antibodies.

So some of that is really helpful for neuroinflammation, especially if I'm thinking, especially if they're younger and I'm trying and I'm thinking, may they benefit from some immune modulation like a globulin, you know, and.

You're talking to kids who may come in with pans, pandas. So just again, if you're listening, Steve's talking like the Cunningham panel that has these 5 or 2 brain antibodies that shows you whether you may need immune modulation.

Right. You're talking about normally these kids. Who in addition to the active infections while I'm looking at active infections and then, yeah. And sure.

And I'm looking at a few other markers, some soft markers like the BGF, which sometimes can give us a sense of Lyme, you know, a Bartonella. However, that being said, since I'm also doing shoemaker panels looking for mold, veggies and mycotoxins, disease is or Sirs, or the systemic inflammatory response syndrome is is often very low.

And so sometimes you'll see a normal VEGF. And they have Bartonella and they have mycotoxins in it. Just suspiciously normal. You know. So you got to take that into account.

I, I do ammonia, plasma ammonia levels. I look at methylation pathways oftentimes, especially if they're very sensitive to treatments that they've tried over the years.

You know, and I'll look I will, of course, do the Patterson, panel, the Radiance Labs, looking at those static kinds and chemokines, very helpful testing for me.

I'll look at, eosinophilic cationic proteins, sometimes from a BCA, as it's a soft marker, but of course. But we do see and I can track it sometimes. I mean, look, I if we had those markers that John Lockhart is really looking for that we

could truly track disease with.

Yeah. I mean, years ago when they were talking about CCL ten, you know, as a really important chemokine marker of, of Borrelia, like if we had these tests that we could do, it would make our lives a lot easier.

So yeah, again, for those listening, Steve's discussing, John Hopkins University was discussing KCL nine KCL ten, CCL 13, by the way, is neuro Lyme. You'll see it in neuro Lyman a CCL 19 they see in chronic Lyme.

But unfortunately there's no labs that run these. It's like they're great markers that you will see sometimes in the chronic Lyme post-treatment Lyme disease, population.

But you can't get them from the local labs. Right. So if by the way, if I ever get John to respond to my emails that maybe he would want to do part of the study I'm trying to do on the soon with this multicenter trial, I keep sending him emails like, John, I'm going for NIH grants.

Do you think you might be interested? I think he's like waiting in the background. Then I'll be able to get, by the way, those markers, because then we'll have John Hopkins.

So I'm crossing my fingers. We'll see what happens. And still in the research world, one of the things that's gotten really big with precision medicine is, metabolomics.

So looking at all of the different metabolites we can find, I mean, of course you have to create the panel in advance of what you do. But you, Bob, now, before when he was looking at cell danger response, he would have very broad metabolic panels that he was looking at via via mass spectroscopy.

And, and so some of that mass spectroscopy is not very convenient to do for diagnostic testing. But once we we can find, you know, I'm using big data, using AI to, to find some of these, these panels and patterns among patients.

I think we are getting closer and closer to having some of these markers, because it's so much of this has to do with real time data. We want to yes, we make a diagnosis and we can follow people.

But one of the I think the, the perils of, of what we do is that we're we do have to use clinical response so many times in tracking how our patients are doing.

And while that's very important what it's what it doesn't help with is that for years down the road, someone has some immune response where they get in a car accident and they have a huge sympathetic load, and cortisol goes up and their immune system function goes down, and then all of a sudden their Lyme symptoms come back years later, or they get a root canal years later.

And then all of a sudden, these old Lyme symptoms that they had because we thought they were successfully treated because their labs are negative, you know, it would be really nice to have some of these panels.

Now. It's a it's a great point. You know, the one good thing I have seen about the apps on and this is going to take time obviously to prove. But ever since we discovered about a decade ago that Borrelia burgdorferi and Bartonella species are biofilm persistent bacteria, what I have noticed is, you know, my Lee is going on, my wife is going on six years in full remission.

She's had a lot of stress in her life, including the last election, which, you know, a lot of patients, as you said, they're in stressful situations. They get divorced, they're in a car accident.

The symptoms will come out. What's interesting is, is that when you've knocked the load of these organisms down enough and we can't really say cure 100%, but I have many patients in long term remission from doing these.

Persist your biofilm protocols. You can speak to yourself if you've seen some of these, but I find for baaed, on the

average, after doing the nine week oral daptone protocol, finishing with a six day high dose pulse for Bard, I need at least four pulses for Bartonella roughly every two months.

Otherwise, the Bard is hanging around and I've had people go in remission for a year where they have absolutely nothing. They look like, you know, they might be cured.

They get a cellulitis, the doc puts them on augmentin, and all of a sudden the Bartonella stretchmarks come out and it's like, oh, the Bartonella was hiding in the body.

And so Bartonella, in my opinion, is even way more difficult to get rid of for Lyme, which is why we were designing this randomized, multicenter, placebo trial.

I'm going to speak to a statistician tomorrow to figure out, like how we can do this, like whether I can do this a year out because ultimately I need multiple pulses.

But I will say the hope for the Lyme community. And I've seen it, if I keep knocking down these loads enough, then when they're in a stressful situation, or they get a Covid vaccine, because I've seen a couple of people reactivate when their immune system got over stimulated, for getting a booster.

Not often, but it's happened. The ones where I've knocked down the load and I've dealt with the emesis factors. We've cleared out the mold and their adrenals in good shape, and they're sleeping well.

And, you know, we've cleaned up everything. A lot of times they do actually quite well long term. It's of course you're right. I mean, it's going to be a question of whether 99.9% is gone and we got a few hanging around in the background.

But that's why you always need a good, healthy immune system. But, I'm pretty hopeful based on what I'm seeing. But you're bringing up some great points that, for me, these newer biofilm persistence protocols, I'm seeing a lot more success long term or I'm not seeing those kind of relapses like I used to all the time, by the way.

Yeah. No, no, I appreciate that. Just just to finish up, I think, you know, now with Covid, and, and some of the, the work that's been done about how spike protein persists and, and when you have spike protein that's hanging around in the body and then there's concussion or there's Lyme, you know, some of the stuff that that Chad Prismatic has found, you know, that that these patients can there are some long term sequela that can happen.

So I think, it is important I do some clotting studies, like micro clot testing. I'm starting to do more and more that looks at amyloid, amyloid clots that can predict how much spike protein is, is affecting the body.

There are ways to evaluate spike protein even these days. Direct spike protein, not just antibodies. So I do think that that's also important. Of course, looking at chlamydia, pneumonia, mycoplasma pneumonia, you know, all of these other usual suspects, Brucella.

You know, Steve Phillips has talked about Brucella a lot. And I think it's really important because we're going to find it every quarter inch. Just talked about Toxoplasma a lot and and at some sometimes like there is crossover with what we're looking at.

And then the treatments are different enough that I think it's really important for us to know if there's a Brucella piece or a Toxoplasma piece or some of these other intracellular infections that we're dealing with, not to mention viruses.

So I think it's also very important to get, viral panels. Yeah. And, and some of these other interesting. I 100% agreed, in fact, with the long Covid cases that we see from radiant, we see Epstein-Barr reactivation and herpesvirus six reactivation not uncommon in these patients.

And one thing I found in the literature a couple of years back is and I haven't had enough experience using this,

turns out that percent diaper a demo seems to get where the Epstein-Barr is hiding in the body.

I found this by accident, a PubMed search. Actually, a couple of years ago. And that's something that needs to be looked at, because when I did the search on it to find out what is the dosage, you know, is it 50 to 75 tide?

I couldn't get a clear indication. I don't think there's enough studies, but there are some studies showing that there may be some novel ways of knocking those viruses.

Apart just from getting our natural killer cells and T cells, in order. But I agree with you. The, you know, the bbca will suppress your immune system's response to the parasites.

And talk. So it's very genetically similar to the BCA. So we've had patients with intestinal parasites that don't go away. And so the bbca was kicked. Right.

So you're right. The the bacteria, the viruses, the parasites and ultimately even the fungus. Right. Whether it's Candida overgrowth in the gut or mycotoxins or for are definitely playing a role in these patients and they all need to be evaluated.

You know, and I think for the patients who are listening that the the doc, your doctors and you as clinicians, you don't need to test everything on everybody.

But you do need to think or at least consider, many of these different things that are going on that it's not just and, and you've shown it. And I think the whole model of good medicine is showing that it's not just one organism is creating one constellation of symptoms, like it's all this stuff coming together.

It's your, you know, your MDS model. And, and it's it's this, this aspect to chronic health, you know, chronic illness that, that we have to consider that it's it's not one thing causing it, but it's the sometimes the, the whole truly is greater than the sum of the parts.

Yes. No. Agreed. I don't know if you know this, but you know the the new book. I got a contract for Simon and Schuster to write my third science book, and I'm in the middle of working on it, and I got the idea of just checking out with the message model how it applies to these other diseases.

So I started with Alzheimer's, and I found out that all 16 points on the sets model applied Alzheimer's. And I looked at Add, ADHD, all 16 points, and the emphasis was that I looked at autism all six.

It's like, oh my God. It's like all these chronic diseases. So it's going to be a fascinating new book. The title will change a million times, but, it should be out in early 2026.

And it's really about the paradigm shift that we need right now for chronic disease medicine. Long Covid. I published it this past year. All 16 points, on the M6 model.

Biofilms, Persistence, and Treatment Order

I would like to go back to a second, though, with the micro plots you're finding, because I don't know that a lot of doctors, by the way, are doing the kind of testing you're talking about this, you know, there's a lot of theories behind why people are sick with long Covid.

They they have the M6 factors, they have pots, dysautonomia, they've got mast cell activation, the and the cilium. Right. There's there's inflammation going on in the endothelium.

There's micro clots with spike proteins. There's a lot of theories going around. But we don't have, you know, long term trials. I'm I'm trying to I'm trying some of these patients on the pravastatin by Bruce Patterson.

You want to talk just for a second, Steve, about the the assays you were talking about, because I don't think a lot of

docs are doing it and how you're using it.

If you're and what you're finding to be helpful. Right. So this used to be a home brew test where people would send in their their blood and they would look at it, you know, under a microscope watching, watching the, the blood clot.

So this has been done in, alternative medicine, complementary medicine a lot. I mean, obviously it was done in regular medicine until probably about the 1950s.

And now since then, it's somewhat frowned upon for us to use microscopes in a, in our office, you know, for, for evaluating blood, interestingly. But, there is some interesting thing, med health clinics is, is one lab that does it and there's more labs that that are looking at at, at how, biofilms and, and how blood is actually starting to clot back, back when David Berg was doing, his he work and looking at soluble fiber and monomer and some of that initial work to.

Thrombin, antithrombin complexes. Right. All that stuff we used to see years ago. Yeah. And that stuff is still real. It's still a thing. And so one of the the earliest theories about Covid and why Covid is, is so dangerous is that micro plots turn into macro clots.

And once there's a macro clot in the wrong place, then bad things happen. And so but if we can see this system happening early, then we can predict how things, you know, how things may look if they go untreated.

And the nice thing about these microplates is fibrinogen has a lot to do with them. And so using fiber analytics early on in some of these, these diseases, you know, such as natto kinase and lumbar kinase, and Sara peptides and things like that.

And Sula Dockside which is available in Europe currently. And some of these other, these other things. And maybe the day for example, that you're talking about, may have some, some benefits for making, making the body not go into such a, hyper coagulant state.

So, Steve, one interesting point and I didn't know I was doing it is, you know, when I first we published the first Covid article using glutathione right back in April 2020.

And I did it because I had the BCA cases where they come in short of breath. I give them a shot of glutathione on 2000mg, and within minutes they'd say the shortness of breath cleared. And I said, okay, good.

A thigh on the blocks NF kappa B the switch inside the nucleus, along with an acetylcysteine alpha lipoic acid. But maybe also glute was pulling out stuff.

So I started using it and we found it was working. That's why we published the first article. By the way, that article has been cited. I think, almost 300 times more than any leading article I've ever published.

It's ridiculous. But I didn't know at the time because you're talking about micro clots, that NSC cysteine interferes with von Willebrand factor and it stops clots.

And, you know, we have not lost one patient who has died, not one in the last four years, as long as they've done the protocol that's on our website can get better.

Dot com under the Covid tab where I was giving all these patients any C alpha lipoic acid, glutathione. And I didn't realize at the time I was indirectly stopping micro clots from forming by giving them NAC.

And it turns out that the Covid virus to replicate, as well as, by the way, influenza, dengue fever, HIV, many of these viruses, they need to lower glutathione to replicate.

I didn't know that when I was published in the article, but it turned out it's been extremely useful. So I think, you know, maybe part of the reason I've had the good clinical success we've had, we're no one's died early in the

pandemic might have actually been.

I was stopping the micro clots, and I didn't even know it at the time. Using NAC would go to take them. All right. Yeah, yeah, yeah. Kind of cool. So have you been using any of those five bullet?

I mean, anything you're seeing at this point or your ear to the ground at this point that's working apart from like, PR Ludy Olean for Marcel, for long Covid and, anything you're hearing from colleagues and stuff that seems to have some promise at this point.

No, I mean, I think that there is a lot of, hope with the dark side. And, you know, again, we can't get it here. I think it's, mostly available in Italy.

And, and so we don't have the data to, to back up, you know, here at least what, what we'd like to do with it. I think right now, the limbo clinics is still, for me, the best, the best thing there is, I do feel, you know, it's it gives a measure of safety to these folks.

Now, the problem is, is that if people have bad but busier, and you give them a high dose of a number of clinics, and then especially if you add nano kinase, these I see a lot of patients flare, especially when I'm using on or to Quinn.

And I feel like we're making progress and then we want to kind of squeeze it. And then I add my analytics later on, especially the high dose fiber analytics.

Those patients seem to get sick for a while. So it is it is a thing to that when you remove some of these fibrin sequestration, you know that that you a lot of times you're going to pull out and open up these, these, these organisms, you know, back into general population.

So it's, so I think we need to be careful with it. And I definitely think that in the, the form back to the micro clotting, if we could find some things that are a little bit more specific, that aren't going to open up all of these biofilm, related, you know, structures for these other organisms, then it's going to be really helpful.

Yeah. You know, the the way we support the works is, is, again blocking at of Kappa B with NAC alpha lipoic acid, glutathione stimulating Nrf2 is second inflammatory anti-inflammatory pathway curcumin, tumeric, broccoli seed extract.

Sulforaphane. Glucosinolates. Resveratrol. Green tea blocking Nlrp3 inflammasome. And by the way, all these are important in Covid two, right Lyme and Covid.

They all using a little bit of low dose melatonin with low dose. Now trick on and you know you can also use things like omega threes for the prostate gland.

And so there's a lot of things out there. But we're finding. Yeah. So interrupt for one second. Because just what you were saying is that when when Covid hit and the Lyme docs were like seeing Covid, we already had all that in our armamentarium.

And so it was like, yeah, we just do this, this, this and this. And these patients responded beautifully to this. Like, I'm not saying that we know how to treat Covid.

That's not yeah, I'm not saying that. But the same mechanisms were at play there. And and so yeah. Right. Yeah we had an advantage because we had seen her success and we knew how to block it.

And by the way, you also don't hear this about Covid, but when the people were dying of Ards, acute respiratory distress syndrome, which for those listening or not, doctors, this is when you go into the hospital and your lungs fill up and they white out and you basically can't exchange oxygen, you die basically from this complication.

And dexamethasone and steroids were used, but it also suppresses the immune system. If you have parasites and other infections, it turns out that that zone and nobody knows this study they gave it in 40 patients.

In a trial. Now one person died with Ards with 100mg of DAP zone because it interferes with an enzyme called Myla peroxidase, which is an inflammatory enzyme.

And it stopped the er depressed people from dying. And it's the same thing with Alzheimer's. This studies on Alzheimer's is using 100mg of DAP zone for 15 years.

In a Korean study with these leprosy patients, they found that the people that took DAP so for 15 years, the Alzheimer's rates were almost negligible.

And the ones who didn't take it, their dementia rates were off the wall and they didn't know. Was that because we were indirectly treating Lyme or we're just blocking neuroinflammation using DAP zone, which is part of what it does, but it's fascinating.

The drug has been out there for like 50 plus years for leprosy. It's turning out to be used in all of these other pathways. And I think we're going to find as we repurpose these drugs, as time goes on, it's going to be one of those drugs that I think is going to really turn out to be a blockbuster.

And I hope I get this randomized trial done, at least started by the end of next year. I sure hope so. And then just just because of using DAP soon, you know, you've helped put methylene blue back on the map, too.

You know, and methylene blue has become one of the most important agents that a lot of chronic illness doctors are using now. It's it's phenomenal for what it does.

Everything from clearing brain fog to acting as a methylated, methylation to to working even on parasites to working on Bartonella. I mean, it's it's phenomenal. Right.

And in fact, in the Alzheimer's research, they use very line of using very low doses to like 5 or 8mg of methylene blue. So mitochondrial function. Right?

I mean, they're using extremely low doses, right. No, no. So yeah it's great. Yeah. Now it's interesting how all of this stuff, you know, intersects over the years because you're right, I was using methylene blue to lower hemoglobin levels initially.

And that turns out John Hopkins research was showing that six days in culture for Bartonella, if you did like rifampin, set max a methylene blue, it was killing by persistence.

What they didn't tell you was how much of the methylene blue was needed. And ultimately, after years of playing around with the dose, at least I found so far that we needed the top dose at 300 twice a day.

Long COVID, Emerging Therapies, and Closing Remarks

We just have to go up very slowly and make sure that people are not on psych meds or things that cause serotonin syndrome, but so far we are having we are having success.

And I fortunately had not had to use things like I. V. gentamicin anymore, which years ago for bath I had nothing. And like the really sick, Bartonella patients.

So, you know, pulsed therapies with persistent biofilm agents looking at the emergence factors, it's really been a game changer in the last decade. Now, I agree. Yeah.

So, yeah. So, Steve, we're getting kind of to the end of the hour or so and any other like clinical pearls or anything else. And by the way, where can people reach you if people have questions, they want to reach you.

What's the best email, to get in touch with you and any other kind of clinical pearls you think you want to share? Just to kind of wrap this up for us, right?

So I work, now I do consulting with Gordon Medical Associates in San Rafael, California, and, and I do have a book coming out, in the near future, probably in April, called The Order of Treatment.

Because I do think and we didn't really get into order of treating things, but, the, so there there is, you know, that that to be had, but. Yeah. Gordon Medical Associates, probably.com at this point is, is probably get a hold of it.

Can be so pleased to be able to hear that, you know, the website. But now thank you so much. Yes. Right. Yeah. I've got to be in clinical pearls. I mean, really is that.

I mean, it's more about that. There's so much amazing work now in mitochondrial research and that when, when the, the M me, CFS folks and the long Covid folks and the Lyme folks are coming together and, you know, in some of these yeah, neurodegenerative illness folks are coming together.

We the research is really starting to intersect. And, and the treatment strategies are really starting to intersect that there's and take into, you know, when you take that with regenerative medicine and some of the findings that they're having, with exosomes and with stem cells, you know, and different kind of cellular therapies, it's and peptides, the world of peptides, and and then possibly, you know, some of the, the, the lack of regulation that may happen to allow certain peptides to be used, you know, over the next several years, I think, there's just there's so much hope for people that even if people feel that they've done everything before, they haven't done everything because there's always new things that that practitioners working with researchers are finding.

And, and that like, there really are answers available for people even when it seems like there's no hope. So my basic my, you know, my, you know, major point is that you haven't done everything, you know, that that there is to do for diagnosis and treatment of your conditions.

Right. And and I agree with you. We really can give hope, which is at this point really grounded in good science and in good clinical research. We are having much better success, right?

In this past decade, since the researchers in the major universities discovered what they discovered with the biofilms and the persistence and of course, all the research, as you say, that's been done on, mitochondrial function on Pots, dysautonomia.

I mean, all of this has come together basically for the Lyme community, and help people. So, Steve, I want to I want to thank you for taking the time out of your busy day.

I know you got to get back to patients. So again, we've been speaking to Doctor Steven Harris. Steve, good friend of mine, has been doing line for 25 years.

One of the great practitioners in the field these days, he's working for Gordon Medical. If you want to get in touch with Steve. Steve, again, thank you for taking the time.

And, my name is Doctor Richard Horowitz. I'm co-host of the Doctor Talk Healing Lyme Summit 2.0. We've been discussing how to use lab testing today for chronic Lyme and some of the integrative therapies that are out there.

I hope you'll join us again soon. Thank you for taking the time to watch. Bye bye.