



## Supporting immune function with long-COVID

**Guest: Dr. Christine Schaffner**

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### **Kirsty Cullen - [00:00:15]**

Welcome to the Fatigue Super Conference, I am Kirsty Cullen, CEO at the Optimum Health Clinic, and today I am joined by Dr. Christine Schaffner.

Christine is a board certified naturopathic doctor who has helped thousands of people recover from complex and chronic health conditions. She completed her undergraduate studies in pre-medicine and psychology at the University of Virginia, followed by a doctorate at Bastyr University. But really reaching beyond biological medicine, Dr. Schaffner is renowned for using a diverse range of healing modalities in order to help her patients reclaim their health. And she's very committed to shifting the paradigm of chronic illness.

So welcome, Dr. Schaffner.

### **Dr. Christine Schaffner**

Oh, thank you so much for having me.

### **Kirsty Cullen**

Not at all.

And so today you've joined us to speak on the topic of long-COVID, which, of course, is in everybody's consciousness currently and is certainly raising the profile of post-viral illness and fatigue and therefore casting quite a spotlight by default on ME/CFS.

So, before we launch into talking about what long-COVID is, I'm interested to know if you've already experienced an influx of long-COVID patients within your clinical practice?

### **Dr. Christine Schaffner**

That's a great question, we're in this new territory and new terrain and we're all learning, and that's why I love these conferences and these summits to just share what we're learning in clinical practice. And as we learn what works, we can all pull this information to help more people.

So I see a lot of complex chronic illness. So I see a lot of patients who are already, what we would call immunocompromised, who tend to be more affected and more vulnerable to these infections, such as COVID. And so, a handful of my patients have struggled with COVID and we get them through it. And then a handful of those patients actually would fit into this box or this algorithm of what we're calling long-haulers or, post-COVID syndrome. And so, I do have experience with this. I have learned a lot. I think we're getting better at how to treat this and how to approach this.

And one thing also that we can, of course, dive more deeply in. I've seen this rise in sensitivity in my patients over the years. And we call this, for a lack of, not to pigeonhole everybody in this, but a lot of

these patients fit in what we call mast cell activation syndrome, or they have mast cells that are more easily irritated or triggered. And so they release more histamine, and histamine has all these physiological effects on the body, but what it looks like for the average patient is this increase in sensitivity and there can be everything from neuropsychiatric symptoms to brain fog to the insomnia to digestive issues, to allergic phenomenon. And I find those patients who are, kind of already teetering in that spectrum, tend to be the patients who might have more of an issue with post-COVID or long-haulers.

### **Kirsty Cullen - [00:03:18]**

Absolutely. I think we've already highlighted within our own fatigue community the similarities between some of the symptom clusters in long-COVID and in ME/CFS and post-viral fatigue. What, apart from, sort of the ones you just mentioned, what are the typical symptoms that you're seeing in the long-COVID sufferers?

### **Dr. Christine Schaffner**

There seems to be a couple of different presentations, but what I'm, definitely the through line is fatigue, right. So what your conference is all about, so I see this low energy, low vitality. I do see respiratory symptoms so people can feel short of breath, they could have tightness in their chest. Some people have more body aches, joint pain, brain fog can be a big one.

And then, what I also see is symptoms that would be associated with low oxygen states in the body. So not getting that good blood flow or that good circulation to the tissues. And that translates to, I'm of course into fatigue, but also can be related to pain and inflammation and just low vitality.

### **Kirsty Cullen**

Yeah, absolutely. The thing that I think is that with long-COVID, we've got a number of factors to consider haven't we? We're not just thinking about how to support the immune system following the initial viral challenge, but we're having to consider factors like, ongoing inflammation and the longer-term health issues that might arise from scarring or tissue damage caused by the initial COVID infection. Would you agree with that?

### **Dr. Christine Schaffner**

Yeah, and I think we're in still new territory, Kirsty, but I think, of course, that's top of mind for all of us. And we're very familiar in the world of complex chronic illness of how there can be an infectious trigger and that there can be, of course, a persistent stealth pathogen that's taking hold of the immune system. But also there can be this post infectious syndrome that the virus, for per se can be, maybe the viral load is down and the virus is taken care of, but the immune system is still acting as if there's still a chronic persistent threat.

And so that is in the world of what we would call immune modulation. So we look at all of the things that get dysregulated from that exposure. And so, I feel that we're seeing that in the post-COVID as well. So we're thinking, OK, what are the physiological effects that we know? How does COVID affect the body? And then, let's say the virus either persists at a low level, triggering all of these inflammatory processes and immune regulatory processes that are dysregulated. So that's one thought.

Or, the viral load could be quite down. It's just the wake of the damage, right, and the wake of the immune response in light of the damage. I'm again, a naturopathic doctor and I totally respect the innate intelligence of the body. And I am confident in the body's ability to heal. But I think it's understanding the approach and how to offload stress in the body so the body knows how to heal.

And I think what the wake up call, especially in the U.S., of how we've seen, such a horrible effect for so many people with this illness is that our terrain in the U.S., many of our biological terrains is really affected. Some more than I think people realize. So we have this high burden of environmental

toxicants from heavy metals and glyphosate, the active ingredient, and roundup to other persistent organic pollutants.

And then we also, we do have, I believe and I feel we have an epidemic of Lyme disease and co-infections and chronic viral infections and parasitic infections. And we have, many patients are affected by mold and mycotoxins. And so you put COVID on top of that, there is not only the COVID and the post-COVID that we have to deal with, but it's all of that that's underneath.

I see this all the time, in my patient population, especially for, let's say, a patient who's struggling with Lyme and co-infections and they might not ever recall a tick bite. And they might even have their first exposure to these things in the womb. They might actually be exposed to that. And then we look at, OK, maybe they were a C-section baby or maybe they were formula fed and then maybe they had lived in a moldy home and then maybe they just didn't know and were eating more genetically modified foods. And then maybe they had an emotional stress or Gardasil shot. Like all of these things and then all of a sudden they can feel symptomatic and we have to treat the Lyme.

And so, that's the way that I work. So, yes, I'm focused. And, OK, what do we know when a patient has COVID? How do we respond and treat them? And then what I've learned with my post-COVID syndrome patients, how to address their health. But it's also, we cannot ignore all of these other aspects that could be part of why people persist with these symptoms.

### **Kirsty Cullen - [00:08:16]**

Yeah, absolutely. We're so used to looking at that jigsaw puzzle within our clinic. What are all the pieces of the jigsaw puzzle that come together to create this perfect storm that results in ME/CFS? And so I think obviously, that's kind of the way that we're used to working, clinically. And so it's interesting to me to consider with long-COVID clients the fact that that's probably not going to sit in isolation and is long-COVID very much linked to some of these already existing underlying health conditions?

So it's quite interesting. And also from a fatigue and energy perspective. I always think it's interesting to remember that ME/CFS is characterized often by immune activation and inflammation, which are the hallmarks here also. And those two elements really burn through our energy resources, don't they? So obviously, when we've got immune activation and a high inflammatory load, it makes sense that the fatigue will follow. Is that right?

### **Dr. Christine Schaffner**

Absolutely. I think fatigue is a natural consequence and side effect of all of the things that are taxing the body. And we have to look at it from a nutritional standpoint, a mitochondrial standpoint, an endocrine standpoint. And then all of the things that we've just explored. From an immune-regulatory and immunomodulatory standpoint, and also an environmental aspect.

And that's why I think, of course this is a great crisis right now as we're living on the planet, but I'm an optimist and I see this as a huge opportunity for really opening up the conversation in the health care paradigm, because the conventional medical community very much acknowledges post-COVID, long-haulers, all of this. And they need tools to understand how to treat this. And I'm hoping that it comes from our great desire to serve these patients, that we open up our framework and our paradigm and they can kind of reach and see what we've been doing all these years with patients.

And I do see, even when I've done a few lectures on this already, and I've seen some conversations and some literature about like getting post-COVID to post-Lyme disease. And I think if we can bridge these conversations, we can not only support the people who need help with post-COVID, but also open up and say, hey, this whole post-Lyme thing and this post-viral thing, this has been really real for a long time and affecting just as many people on an annual basis and so I am hoping that we can really pull resources and yeah, just support those in need.

## **Kirsty Cullen - [00:10:54]**

Absolutely. And there's also this concept, isn't there, of the inflammatory threshold, which sits very nicely with what you just described, so this concept that once we breach that threshold, that's where we tend to see the cytokine storm, which, of course, everyone is now so familiar with as a concept. And ultimately that's where the damage to the tissues occurs and often where this more, sort of, illness severity. So it's really important to point out, isn't it, that for those people who already, maybe have an increased inflammatory burden, of course, they reach that threshold much more quickly. And so working with people even before any exposure to kind of understand their current inflammatory burden and how we decrease that is very important.

## **Dr. Christine Schaffner**

Yeah, absolutely. And I think the more that I know and the more that my patients teach me, I think one of the most empowering things, whether you're struggling with a chronic illness, struggling with post-COVID or just want to prevent any of these things from happening, like really looking at our lifestyle practices and how we can implement more detoxification practices, because I think part of lowering that inflammatory threshold is really living the lifestyle of detoxification and supporting our, what we call organs of elimination, our lymphatic system and just making the choices that we feel empowered to, to avoid exposures that we can.

But even patients who do everything right and really, really live a clean life what we would say. We test the glyphosate with a urine test and they still can have high levels. And so, we just have to understand the time that we're on the planet and we all need to be very aware of the things that we are exposed to and that bioaccumulate, but it's very apparent we can do so many things to support our bodies so that bucket is constantly draining and open and we don't, we're not always teetering on those kind of, almost catastrophic event in our health.

## **Kirsty Cullen**

And as you say, we're learning so quickly all the time at the moment. And there's something that I've noticed which is just sort of bubbling. It's very sort of small research observations at the moment and very early clinical anecdotes that for some, the COVID virus may be triggering a reactivation of old latent viruses. So things like varicella-zoster virus, herpes simplex, Epstein-Barr, for example. And that actually that might be what is playing quite a crucial role in the development of the long-COVID picture and associated symptoms. And of course, it is such early days. But whilst we keenly await more research, is that something that maybe you're starting to experience clinically or a theory that's of interest to you at this point?

## **Dr. Christine Schaffner**

Yeah, I do. I do think that is kind of, I see the same thing for sure. And I also think there is a layer of symptomology that is unique to post-COVID that might not always translate completely textbook to these other viral infections, at least that's my experience, but, you know, again with our big toolkit being into the health care that we both are in, is that we do a lot of things that support the immune system and the terrain.

And so, whether we're having to treat COVID specifically or these latent viruses that get reactivated, and our approach can be very similar in how to support the immune system. And so I use a lot of herbal therapy and botanical medicine in the U.S. I've been using a lot more peptide therapy. Peptides are strings of amino acids that are less than typically around 50 amino acid sequences. And these different sequences have different biological effects in the body. They're very biocompatible. We make them naturally, and they're classes of peptides that can be for healing and anti-inflammatory. They can be cognitive enhancing and nootropic, they can be immune-modulating, they can also help with mast cells.

So that toolkit that I have recently been more and more connected to, especially for these patients, I've seen that turn the corner and I'm happy to go into what I've been seeing there. I also think our oxygen therapies are very helpful for these patients, things like hyperbaric oxygen or anything that's

going to really help with optimizing blood flow, decreasing fibrin, optimizing coagulation in the body and getting that good blood flow to the tissues.

And then nutritional IV therapy, I think can be very helpful if you have access to that. And then again, all the train support, right. So, supporting the organs of elimination, supporting the gut, supporting the lymphatic system. And that is typically my comprehensive approach when I approach a patient with post-COVID.

And so, with that being said, we're treating many things, probably that are happening in the body. And one other lens that I definitely appreciate, again, around the histamine piece. So more mast cell stabilizers sometimes H1 or H2, blockers can be helpful to decrease symptomology just to kind of, again, calm that overactivity in some of these patients and that can help them stabilize and endure treatment better. And then as they heal, we don't need those things as much.

### **Kirsty Cullen - [00:16:12]**

And the lymphatic system I always find can be quite a new concept often to clients, so they know about the cardiovascular system, etc etc, but can you talk to us a little bit about why the lymphatic system is so important to both immunity and also to fatigue.

### **Dr. Christine Schaffner**

Yeah, it's one of my favorite topics. And I appreciate you asking because I agree, it's very underappreciated, very overlooked, but very rewarding to treat in a lot of our patients, and if this is a new concept to you. So the lymphatic system is this body wide network of lymphatic capillaries, vessels, nodes, organs, the glands, and it's tied intimately to our circulatory system. So as oxygen rich blood travels in our arteries into the capillary space in our tissues, part of the fluid that's in our blood leaves the capillary space and becomes what we call interstitial fluid.

And it bathes the space in our tissues, we call that the extracellular matrix, and that's an area of high activity in the body, that's where toxicants can get effective or structural proteins like collagen. It can also affect cell membranes, that's where viruses can be disruptive or different pathogens like Lyme can have an affinity to degrade, again structural proteins and signal inflammation. So, that fluid is really important of coming and bathing, bringing oxygen and nutrition to that space, but also removing waste.

And then when that fluid basically kind of bathes, and it has somewhere to drain, it drains into what we call the lymphatic capillaries. And then those capillaries go into larger vessels like vessels, and then also nodes. And so this is a really interconnected space in the body where it's a waste removal system, it's an immune surveillance system.

And I also, into kind of the emotional perspective of health, I think there is kind of this emotional memory or consciousness, like it's stored in the spaces, so as we move this fluid that's often very stagnant in our chronically ill patients. So as we create movement, and we can talk about all the ways to do that, people feel better and then they can also move. Whenever you move stagnant energy in the body, other things kind of surface. So, not only do you feel better, but sometimes you can have emotional releases. Sometimes if you've had a lot of stagnation in the system for a long time, especially with a viral picture, you might feel flu-like initially and it's just the immune system kind of reengaging and getting exposed and expressing immunity to the things that are in the lymphatic fluid. And so, that's not a sign you don't need it. It's actually OK, how do we support you as we get your lymphatic system draining?

And so, yeah, I think it's, again, such a supportive part of the healing journey, no matter what you're struggling with and we use things like botanical medicine, we use a lot of topical therapies and transdermal things, movement can be very helpful for getting our lymphatic system working, dry skin brushing, there's also those vibration plates. I have lymphatic drainage practitioners who work with me who are very highly skilled. There's different equipment. I have something in my office called the FLOWpresso which is compression and infrared and PEMF. And so there's just all sorts of tools. But if

you don't know what to do with your health and you feel really stuck, start paying attention and having an awareness to your lymphatic system and doing some supportive therapies, maybe some of the things I listed, and see how that can create movement in your body.

### **Kirsty Cullen - [00:19:41]**

And it's often quite an interesting discussion isn't it, because obviously movement is key. And for somebody without fatigue, we might talk about rebounding and exercise as useful ways to kind of encourage that. But obviously within a fatigue community, it's about still stimulating the system, but not going beyond that pacing threshold. And where we think the heart as the pump, within the cardiovascular system, we can also think about maybe the diaphragm as, maybe one of the pumps within the lymphatic system. And so therefore, breathing techniques can be quite key, would you like to say a little bit more about that?

### **Dr. Christine Schaffner**

Yeah, that's a great point. And of course, I have a lot of patients who, walking around the block is not an option, right. So I know walking for a lot of people is, that's a great way to stimulate movement in the lymphatic system. But there are a lot of things for the fatigue patient to do and breathing is one of them. And as we inhale and create expansion in our thoracic cavity and then we exhale, that inhalation, exhalation opens and contracts are a thoracic cavity.

There's two key points with the lymphatic system, as it brings the lymphatic fluid back into the circulatory system. One is called the thoracic duct, which is on the left side of the clavicle, and then one is called the right lymphatic duct. And so, when you think about these two spaces that, opening and closing of the rib cage can serve as a pump and compression to bring lymphatic fluid back into the circulatory system.

### **Kirsty Cullen**

Superb. And then another topic I know that you love is the vagus nerve. And research suggests that the vagus nerve has a really key role to play in feeding back to the brain, our inflammatory stages. And I think inflammatory control is so important in this particular topic, as we've discussed. Can you simplify for us why the vagus nerve is so important to our inflammatory response and really how we can go about supporting our vagal nerve health.

### **Dr. Christine Schaffner**

Yeah, yeah. No, that's a great question. And so much amazing information is coming out about this, which is exciting. And as you mentioned, the vagus nerve is the 10th cranial nerve. So cranial nerves are attached to our central nervous system and so, exits the brain at the base of the skull. And then there are these branches of the vagus nerve, and it's the wandering nerve, it's just a long nerve that innervates our lungs and our heart and our digestion. And it's bidirectional, so we actually get more communication that's happening in our body, that gets sent back to the brain, then the brain sends to the body via the bidirectional communication in the vagus nerve.

One of the big roles of the vagus nerve is to activate our parasympathetic nervous system. So when we think about post-COVID and all the things that are happening, there's a lot of heart symptoms, right? So some people might have even heart palpitations, they might have arrhythmias, they might have chest pain even.

And one of the things that can really help support our cardiovascular health is having that vagal tone, so that ability to switch from sympathetic into parasympathetic. And so, there's a lot of ways to, from that one, just kind of thought there, there's a lot of ways to support the vagus nerve and get into parasympathetic state. So, breathing can be helpful, grounding can be helpful. I do a lot of work to support the lymphatics in the neck, that actually are very close to a lot of activity and communication of the vagus nerve. And so, if you have chronic stagnation in the lymphatics in the neck, or this is a source of chronic viruses in the neck, that can basically, through transport and signaling, can stir up

inflammation and histamine and irritate the vagus nerve. And so the vagus nerve can be infected or can be toxic. And so we think about those aspects.

Kind of circling back to the heart, so I don't get derailed, one way to kind of have the biofeedback of what's going on is looking at heart rate variability and the more variability we have in our heart rate, the more parasympathetic tone we have. So, there are all these wearable devices or just things that you can take on and off or go to your functional medicine office or someone who's practicing naturopathic medicine to look at. And so you can get that feedback of, like, OK, how much parasympathetic tone or vagal tone that you have. And then based on that, we can support you with different exercises.

I love the work of Stephen Porges and his Polyvagal Theory. He has some tools called Safe and Sound Protocol, the focus unit that you can work with, a provider to do that. And again, supporting lymphatics, using different topicals, clearing up any infections that could be downstream from the mouth or the sinuses that can be affecting the lymphatics there.

And then the vagus nerve communicates with the acetylcholine. So when products like phosphatidylcholine or I have a colleague, Dr. Driscoll, in the U.S. who created a product called Parasymp Plus that I love and that works.

And so there's a huge list. I'm just kind of scratching the surface here. But those are things that come to mind. And I think most patients who fit in this post-COVID picture, supporting your vagus nerve, supporting the parasympathetic state where you can get into the healing and reparative state is only going to lead towards health.

### **Kirsty Cullen - 100:25:17]**

Yeah, absolutely. I mean, on that subject, obviously it brings us kind of neatly to acute anxiety and chronic stress and the link to immunity. So, I mean, obviously, anxiety results in a surge of hormone, stress hormone production. And it's thought that higher levels of cortisol and adrenaline impact negatively on our antiviral response and lower all important white blood cells. So with that in mind, how important would you say that stress and anxiety management techniques are in terms of supporting our immunity?

### **Dr. Christine Schaffner**

Yeah, no, I think it's a great question and great point and so critical, right. And it's this chicken and egg right? Because a lot of the things that are plaguing someone's physiology, also physiologically increase anxiety, increase depression, increase some of the neuropsychiatric symptoms. And so there has to be this really concentrated effort to help people navigate stress and to understand stresses. Yes, it can be situational. There's a lot of things to make sure we're doing lifestyle wise to mitigate and modulate stress. But I think, what I'm hoping, that the conversation grows is looking at anxiety, depression, any of these neuropsychiatric symptoms that we label, our mental health symptoms as a source, as part of it is neuroinflammation. So how do we support neuroinflammation and modulate that? And that can really help with stress and anxiety.

So, some tools that I often use. Of course, there's a long list of lifestyle things and things for meditation and getting relaxed and all of those mindfulness practices that I totally feel are important.

And then there's, again, amino acid therapy, so with this nutritional deficient time that we're all in and our gut microbiome, all dysregulated, we need our gut microbiome to make certain building blocks or neurotransmitters. So sometimes things like 5-HTP, which supports serotonin, also GABA, which can help decrease glutamate and help us to feel calm. Those are neurotransmitter supports that a lot of my patients do well with.

And then again, helping with sleep because sleep helps our brain detoxify and that helps the lymphatic system to work better so that that can help modulate inflammation. And then I use a big tool kit for neuroinflammation. So I think of things like Baical that active ingredient in Chinese skullcap,

I like CBDs, I like building blocks and things for healthy cell membranes. I like Liposomal Melatonin. I also like using liposomal botanicals that can get into the cell membranes, can get into the neurons, get into the brain to help if there's a viral activation within the brain, creating the neuroinflammation.

So I use a lot of BioPure products in the U.S. and there are these liposomal herbal preparations, So that's herbs with Phosphatidylcholine so that they can get better absorbed. And again, some, really common, lovely herbs can be things like Andrographis, red root, I love I said Chinese Skullcap, Propolis, rosemary and dandelion root, astragalus, the list goes on. But those are some things to think about. And depending on what you're dealing with, you can kind of pair like, oh, is this more like Lyme and co-infections that you need a herbal remedy for or, the herpes family of viruses, retroviruses is a whole other conversation that, that's another piece that can keep our brains inflamed. And then there can be parasite activity, there can be mycotoxins or inflammation from mold exposure and then also fungi. So, those are the things that I think about. I think about the gut, brain.

And then just another note. I love the work of HeartMath and HeartMath looks at really how the heart has the strongest electromagnetic field in the body and that they have studied how the heart, actually is the great conductor and informs our brain and informs our neurology and our nervous system communication. And so, the practices are pretty simple. It's really to get in a state of positive heart coherence, which can be in states of gratitude and appreciation and all the things that feel good. And that's not just a simple thing, it can really increase heart rate variability, increase coherent rhythms in the heart, and that translates into healthier brain, healthier communication, more coherent communication. And I think that's something that we all can connect with.

### **Kirsty Cullen - 100:30:09**

Absolutely. And there's so much wonderful emergent evidence around many of the things you've mentioned there in terms of supporting natural killer cell levels and the general immune system, so I mean, the research is certainly there and very supportive from that perspective. Considering the research, which obviously we're looking at constantly, there are early suggestions that there might be some key dietary factors and nutrient deficiencies that might increase long-COVID development. Could you just talk us through maybe just a couple of key, maybe dietary, considerations that might be useful for supporting the immune system?

### **Dr. Christine Schaffner**

Yeah, that's a great perspective. And I think, of course, the nutritional aspects that have been very much published and researched and appreciated and clinically relevant are looking at nutritional support with vitamin C, vitamin D3, zinc. Those are the big ones for me nutritionally. A lot of my patients eat organic. They eat really wonderful diets. But we do use supplementation, especially to support immunity during this time. And then some of my patients also do really well with IV therapy, which is getting nutrients through your brain. So we bypass the gut and you get that good absorption in the higher doses than what we would be able to just through a supplement. And so those are just, as far as the dietary things.

And then that histamine idea. So bioflavonoids, quercetin, avoiding high histamine foods that are typically the aged foods, but can also be things like strawberries and things like that.

### **Kirsty Cullen**

And just, you mentioned melatonin, and I just wanted to return to melatonin for a second because I was reading some research that suggests that low levels of melatonin may switch on inflammation by activating inflammatory cytokines. And of course, melatonin is a sleep hormone. So how important is good sleep quality and sleep hygiene in the context of health here?

### **Dr. Christine Schaffner**

Yeah, I think melatonin is one of those really important things to think about for not only having our circadian rhythm be regulated and pressed to get really good sleep so that our lymphatic system



works and then we can repair and restore and feel as good as possible the next day. But it's not only a circadian rhythm support, it also really helps, it's neuroprotective, it's an antioxidant and helps to cleanse the brain from the things like heavy metals, there's research on that. And also viruses, it can help clear the brain of viruses, parasites, bacteria.

And then, as you mentioned, melatonin is on our COVID protocols and our post-COVID protocols because it does inhibit some inflammasome pathways and helps to protect the lung from, so it kind of prevents cytokine storms and it helps to also, if that's happening, quiet them down and prevent injury. And so, I kind of think we live in this melatonin deficient time when we think about, OK, if our gut microbiome is affected by glyphosate and we're not making enough tryptophan, that makes serotonin, which makes melatonin, we can be at a disadvantage.

Also, all the junk lighting and all of the blue blocking or blue light, rather, at improper times can be affecting our pineal gland production of melatonin. And then we think about the pineal gland, which is that part of our brain that helps to produce melatonin. It's highly affected by a lot of these neurotoxins, like fluoride, aluminum, bisphosphate. So, again, if you get a couple of things out of this talk, the lymphatic system and then how to optimize and support melatonin. And I feel for most patients that supplementing with liposomal melatonin can be quite helpful and necessary given all the stress we're up against.

### **Kirsty Cullen - [00:34:05]**

And you mentioned there the gut and the wonderful microbiome, and we know that digestive symptoms are possibly a common symptom within the long-COVID picture and viruses are well known generally to sort of disrupt and disturb the gut bacteria. So how do we look at going about supporting the gastrointestinal tract and sort of microbiome diversity for these particular patients?

### **Dr. Christine Schaffner**

Yeah, great question. And the more that we learn about the microbiome and then the virome which helps to regulate the microbiome, it's all interconnected. And so, again, to maybe simplify that, is that when we think about our digestion, we want to make sure you're having healthy elimination. And then if you're having symptoms of gas, bloating and constipation, we know that your gut microbiome often needs to be addressed. And so, one of the key aspects that I look at is, of course, the vagus nerve, I think is really important for our digestion and helps to optimize bile flow, motility, all of these things helps us to be in parasympathetic so our digestion can work.

But I'm a big proponent of bile flow. So I think a lot of modern life, our bile basically gets produced by our liver, there's all these biliary tracks that take the bile to the gallbladder. The gallbladder is a storage place for bile. And then bile is really a route of elimination and so, bile helps us to digest fat, but it also helps us to eliminate environmental toxicants, hormones, metabolic waste and bile is really needed in the gut to stimulate peristalsis to set up the terrain for a healthy microbiome.

And then, we do all sorts of things to support bile flow and make sure the bile is thin and a good consistency. By the way, melatonin helps with that. All roads lead back to melatonin. And then, with that being said, OK, so we have healthy elimination, we have good support with the nervous system, we have healthy bile flow. And then just looking at the state of the microbiome. And so, do people have opportunistic pathogens that are taking home? Do we have to kind of de-weed the garden so the microbiome can thrive? So I look at parasitic infections, fungal overgrowth, those are often very common, and then that can, of course, translate to bacterial overgrowth. More commensal bacteria can be overgrown. And so, we may have to use anti microbial herbs to kind of help with the fungi, parasites and bacterial overgrowth. And then we also look at how to repopulate the gut with good, healthy probiotics, after we de-weed the garden, if you will. So it's, layered and complex and so many different approaches.

There are a lot of emerging tests that are leading us in a better direction to where to start with the patient. I like the GI-MAP test. I know Vibrant Labs just came out with a really cool test with the Gut Zoomer. So labs used to not always lead us in the right direction for gut health, but I think they're

getting better.

**Kirsty Cullen**

Superb. It's so fascinating to kind of lift the lid and see how applicable functional medicine is within this very new and emerging condition. So thank you so much for your contribution. It's so interesting to hear.

Christine, if people want to know more about your work where can we direct them to?

**Dr. Christine Schaffner**

Oh, thank you so much. My website is [drchristineschaffner.com](http://drchristineschaffner.com), so you can find out more information about myself. I have a podcast there, and then I have a clinic in Seattle, Washington. And I also do telemedicine with a wonderful team of providers, and that's called [immanencehealth.com](http://immanencehealth.com)

**Kirsty Cullen**

Wonderful. Well, thank you so much once again for extending your time to us today.

**Dr. Christine Schaffner**

Oh, thank you so much for the invitation and the conversation. I really hope it helps a lot of people.