



Toxins, pathogens and inflammation: how our immune system, gut and brain interact to affect our mental health

with Dr. Jill Carnahan

[The MindHealth360 Show](#)

Episode Transcript

Host: Kirkland Newman

Guest: Dr Jill Carnahan

The MindHealth360 Show - Dr. Jill Carnahan

Dr. Jill Carnahan:

Well, first, the history is so key because if I really listen to their story, when were you last well? Do you remember ever feeling better than this? Often there's these clues, like a change of environment, or I got sick, or something happened traumatically, or I lost a loved one. There's these clues, and so I will go into those clues. But a natural answer is I still start with the gut because the gut. I remember, years ago, college kids would come with depression or anxiety and there would be mental disorders or mental diagnoses, and I'd say, well, we need to do a stool test.

And they'd look at me like I was crazy. But the truth is I always got more traction by starting with the gut immune interface, which is psycho-neuro immunology. And then they would feel better, and they're like, I don't know how this worked, but by changing my diet, getting rid of gluten, dealing with the dysbiosis, and then whatever things we did. And then I would go onto the deeper levels, the environmental toxicity, the old infections, but I would do just what we talked about here for mental health. That's exactly how I'd start.

Kirkland Newman:

Welcome to the MindHealth360 Show. I'm Kirkland Newman, and if you, your loved ones, or clients suffer from mental health issues such as depression, anxiety, insomnia, poor memory, poor attention, mood swings, exhaustion, et cetera, I interview the leading integrative mental health practitioners from around the world to help you understand the root causes of these symptoms, many of which may surprise you and suggest solutions to help you heal. If you like this interview, please do subscribe and forward to others who might find it helpful. If you want further information, please go to www.mindhealth360.com or find us on social media.

Kirkland Newman:

So Dr. Jill Carnahan, thanks so much for being on the MindHealth360 Show. I'm really grateful, and I know we've been trying to schedule this interview for a long time, since almost pre-COVID days. So it's an absolute honour, and a pleasure to have you on, and I'm very grateful. You are an expert in so many different areas. And I'll mention your biog, which is also going to be in the show notes, but you are just so much more than your biog. But anyway, I'll start with your biog. So you received your medical degree from Loyola University School of Medicine in Chicago and your bachelor of science degrees in bioengineering at the University of Illinois. You're board certified in both family practice, family medicine, and integrative holistic medicine. In 2006, you were voted by the faculty to receive the Resident Teacher of the Year award and elected to Central Illinois, 40 Leaders Under Forty.

In 2010, you founded Flatiron Functional Medicine in Boulder, Colorado, where you practice functional medicine, and you have a very thriving practice. You have an upcoming book in February 2023 called Unexpected, and I'd love to hear more about that. Published by Forefront Simon & Schuster, and you're a

10-year survivor of breast cancer and Crohn's disease, and you're passionate about teaching patients how to live well and thrive in the midst of complex and chronic illness. You're also committed to teaching other doctors how to address the underlying cause of illness rather than just treating symptoms through the principles of functional medicine. So what I'd love to do is dive right in. There is something I'm fascinated by, and I think you're very, very well versed in, and that is the emerging field of psycho-neuro immunology and, essentially, you do a lot with toxins, pathogens and how they impact the immune system, the inflammation system, and then also mental health.

Now you obviously, your practice is a general practice, and you cover everything, and your personal experience obviously is as a cancer survivor. So I'd love also to hear a little bit about your story, but in terms of mental health, because that's what this show is about, I'm fascinated by the link between the nervous system, the immune system, and our mental health. And I think that's such a thriving important area, and I know that you do so much when it comes to toxins, detoxification and also pathogens, treating pathogens and how those impact both our nervous and our immune systems and how those, in turn, impact our mental health. So that's throwing it all at you. I don't know if you want to break it down, maybe start a little bit with your story, why you were drawn to functional medicine in the first place, being at a traditional doctor originally, and then talk to us a little bit about your focus and your areas of expertise in light of these topics.

Dr. Jill Carnahan:

Okay, so let's start at the beginning and I'll try to go through quickly, but I have always been fascinated by how do we stay well and thrive? And it's interesting because I did not know years before medical school that I would have to go through so many illnesses personally. Now in my forties I've come to completely understand that part of my life, my soul's journey is actually experiential. So I get to experience really difficult things so that hopefully other people don't have to experience those things because when I experience those things, I learn these lessons really deep and really well and then I go on to be able to help to teach and train other doctors and help my patients. And so I've just come to grips of the fact that I'm a guinea pig in life in so many ways and it started in my medical school career.

I started in allopathic, conventional medicine, as you mentioned, but I always had the heart of a naturopath or a healer. I knew that there were ways to overcome illness. I grew up with organic food from the garden. I grew up on a farm, my mother was a nurse, but we always went first to herbs and natural remedies before medications. So I had this background of knowing there's more out there than just medications and surgery. But I realised that if I really wanted to shift the conversation in medicine in the United States, at least allopathic medicine was still the best reimbursed, kind of the best system. And if you have a heart attack or a stroke or anything like that, you want to be in a conventional system. But I went into medicine knowing that I wanted to shift or change and be a little different.

So it was a little tricky just because I'm learning stuff that's very, very conventional, but in my heart, I'm like, but wait, there's more. But I did not know at that time there was something called functional or integrative medicine. And I started in medical school learning about it and pursuing that. Well, then, all of a sudden, at 25, I find a lump in my breast. It turns out to be a very aggressive breast cancer at 25 years old, which for any of you who don't know, many, many women, of course, nowadays are getting breast cancer. It's just this epidemic. But at 25, it's still quite rare. And it's rare because it's incredibly aggressive. I was with a group of women under 40 and I'm the only one still living of that group. So it's a deadly disease.

So all of a sudden, I'm faced with this life-threatening illness, and I ended up doing a very conventional regimen of toxic chemotherapy, three drugs, and surgery and radiation. I did all the conventional, very, very aggressive treatment. I lost all my hair. I got very, very sick from it, but I have no regrets because it saved my life. But what I did alongside that was nutrition and wellness and how do I save my brain from chemo, and I learned a whole lot through that of how you can still do the conventional things but also revive your body and mind and soul after something that tragic and that devastating as this. And I always say the cancer was easy. The treatment itself was what, for the last literally 20 years, I've been recovering from. Just six months after I completely finished chemo I was considered cured from breast cancer, at least in remission, I developed Crohn's disease. Now, this makes perfect sense because what happened was I had a very high genetic risk. I didn't know it. I had undiagnosed celiac, and I was eating glutenin, and I had this toxic chemotherapy that poked holes in my gut and created endotoxemia, or basically the particulate matter, the coating in the bacteria goes into the immune system and triggers an immune response. So to my knowledge now, it's no surprise I got Crohn's. But at the time, of course, I'm like, "What's going on? I just got over cancer now I have Crohn's." And so, once again, I was like, "Okay, here I am. I got to learn. I got to fix this." And I first had to fix this myself before I can help other people. So I dove into the gut and the microbiome. I've become a gut expert because of that.

And I really learned what is lipopolysaccharide, what is endotoxemia. How does this immune system interface cause, really, all autoimmune diseases that we see? And I remember asking my gastroenterologist, "Doc, does diet have anything to do with this?" And he looked at me point blank, and he said, "No, Jill. Diet has nothing to do with this." Well, that was the last day I ever saw him, and even though I did not know what the answer was, I didn't know if diet had something to do with it, but my intuition was like, no, there's more. And I dove into the diet, I made massive changes to my diet, and within two weeks, my fevers, my symptoms were resolved.

I wasn't cured of Crohn's in two weeks, but over the next two years, I balanced the microbiome. I really learned about the gut-immune interface. And today, it's 20 years later, I think the bio you had was old, so now 20 not 10. I'm a lot older... But anyway, all that to say, I am completely healed of breast cancer and Crohn's disease. They're gone. It's not remission. It's gone, literally. So, that's a little bit of the

background. And so, of course, I'm so passionate about the immune system because immune system and cancer and Crohn's and immunity, like my life, is an example of everything we're talking about.

Kirkland Newman:

Totally. A hundred percent. And I mean, what an amazing story, and well done. It's so thrilling that you're here, and you're obviously here on a mission and a very specific one at that. So we're very blessed to have you, Jill. And in terms of the immune system, one of the things that I'm very interested in is the effect of the immune system dysregulation essentially on mental health. And so, I think, first of all, what dysregulates the immune system or what causes chronic inflammation? And are the mechanisms of the effect on mental health, how can that lead to depression, anxiety, insomnia, irritability, et cetera, even ADHD.

Dr. Jill Carnahan:

Okay, I am so excited you asked because I'm going to go to the elephant in the room and talk about something your listeners may have heard because you've got some amazing guests. But it's not going to be the first thing you think of with mental health, but it probably is the biggest factor in the United States of America in mental health. And that's what I mentioned before. It's called lipopolysaccharide endotoxemia. Now that's a long mouthful. I'll explain what it is. Basically, the bacterial coatings in our gut have a very, very potent inflammatory immune effect. As long as they stay in the gut lumen, no big deal. It doesn't cause a problem. But because our society, our toxic world, our toxic chemicals, and I can talk later about how that affects the permeability of the gut, because all of these insults and whether it's psychological stressors, isolation, and loneliness, which we've seen an epidemic in the last several years, or whether it's toxic chemicals in our diet, in our water supply, in our food supply, or whether it's environmental insults like mould or in infections like tick-borne infections, Lyme, Babesia, Bartonella or Ehrlichia or many other things.

All of these things can have an effect on the degree of permeability of the cells in the gut. The cells that line the gut are called Enterocytes. These are like tiles on your wall. And when that grout between the tiles dissolves, all of a sudden, the bacterial contents start to leak through. And what you may or may not realise is the layer between the gut lumen and the immune system, which is the bloodstream, is one cell layer thick. So there's not a lot of barrier there. And if you lose that membrane integrity, all of a sudden, the coatings of the bacteria and the food particles and things sneak in right straight to the bloodstream. Now our immune system is housed all over our body, but primarily, especially with the gut-immune interface at the gut lumen, we have a huge amount of dendritic cells that are just sampling. They're like Pacman, and they're ready to be like, "Oh my gosh, there's a virus. Let's attack." So they are ready to protect us. They are like the armed forces outside the city wall waiting for things that are going to come by and attack, like a virus or a bacteria. So they're ready, they're doing their job.

But when they see foreign LPS, lipopolysaccharide or food particulate, or things that have no business being outside the gut, they're like, "What the heck? This stuff is not supposed to be here." They mount

an immune-inflammatory response. And now, with COVID, this has become more common, the cytokines and stuff, the discussion of that. But we've known for decades that these cytokines that are respondents to an insult, and the immune system isn't always perfect. It can think that a benign gut lactobacillus coating or bacterial coating, or endotoxin is a threat. So it mounts an immune response producing thousands of cytokines, and particularly one is related to mood, and that's IL-6. We've probably also heard about that. If you just pull PubMed studies of IL-6, depression, anxiety, insomnia, bipolar, et cetera, et cetera. The studies are alarmingly huge as far as the link between IL-6. There's other cytokines as well. But what happens is this LPS tends to be one of the most potent triggers to cytokine production. And that cytokine production goes on and has inflammatory effects all over the body. And the brain is a huge place where we see this with cognitive subjective, cognitive decline or actual cognitive decline, memory issues, inflammatory issues, even autoimmune diseases like multiple sclerosis, rheumatoid arthritis, Crohn's colitis, lupus, et cetera. And like I said, the links with depression, anxiety, insomnia, bipolar are all very, very clear and potentially more linked to LPS and IL-6 than anything else that we talk about.

Kirkland Newman:

That's so interesting. And so, would you say that the mechanism is always through the gut? I mean, do you have to have a permeable gut in order to have this immune problem? Does it always start in the gut? Because I've heard about the leaky brain blood barrier, essentially. Now in order to have a leaky brain blood barrier, do you have to first have a leaky gut? What's the connection?

Dr. Jill Carnahan:

Oh, this is such a great question because leaky gut is so common. I used to actually test patients for this. There are specific tests, now I do not. I assume that every person walking into my office has some degree of permeability. It's just so common in all of us, even healthy patients, and we show that postprandially, especially when we eat gluten, even if you have no sensitivity to gluten and you don't have celiac, there is a massive increase in permeability within four hours after we eat, even in those who don't have celiac and don't have gluten intolerance. So gluten can be a big trigger for all of us. And then, of course, the toxins in all of those. So that is a big deal. But what your question was, does it happen elsewhere?

One of the things we don't talk about a lot but is very, very common is dental issues. And basically, our roots in our teeth go directly into the bloodstream. So if we have a failed root canal or a cavitation where there's bacteria sitting in a pocket in our gums, this can be just drip, drip, dripping bacteria straight into the bloodstream. And this is also a massive source of endotoxemia, really, any tissue we call, we talk about endothelial dysfunction, and this is just blood vessel linings, also having leaky permeability issues and then the mitochondria. And we know that when cells themselves, the cell walls which are phospholipids, get damaged, all of a sudden, we lose communication. We start to leak cell membrane contents, which causes the cell danger response, which is at the root of so many chronic illnesses that we see. So really, any membrane can become permeable, but there's places where the immune system

troops are higher percentage. And that's why I mentioned the gut because the gut is where there's a large number of troops we have housed in the gut, whereas we have maybe less on the endothelial lining or less on the blood-brain barrier or less in the dental cavitations. But all of these places can happen. Really any membrane in the body can create inflammation.

But often what happens is it starts in the gut, or it starts with the gums, or it starts with sinuses or lungs, anywhere where there's potential bacteria, and then that triggers an immune-inflammatory response that goes all over the body. And for example, say you have a permeable gut, say you're a celiac, and you don't know it, and you have some toxic issues with the gut, you have overgrowth of bacteria, and all of a sudden, you have permeability leakage of lipopolysaccharide, the immune response gets triggered. Your IL-6 goes up that IL-6 and the other cytokines that go with it, they will float around your entire body, and they will go into the brain through the blood brain-barrier and go into the body and the tissues. So the effect is all over the body.

Kirkland Newman:

That's fascinating. And in terms of the effect of an overactive immune system and inflammation then on your nervous system, what is the link between the nervous system and the immune system? Because we're establishing more and more the importance of the nervous system for mental health and the stress response for mental health. Talk us through the link between the immune system and the nervous system.

Dr. Jill Carnahan:

Okay, again, just great questions because this is absolutely linked. And so first of all, we know, and again, you're the expert here in all of the people you've interviewed with the amygdala and the trauma response and the fight or flight, I mean that's just been established. I'm sure you've talked a lot about it, but basically something startles or frightens us. It could be actually a movie, it could be a conversation that ends with an angry friend or family member, or it could be a loss of work or getting a diagnosis of a life-threatening illness. Any of these things psychologically will cause a threat response and our amygdala response with a fight or flight or freeze. And those responses happen. But what you may or may not know, and this is in the literature, I did the research for my book, that chemical insults like mould, like environmental, say formaldehyde in your environment and depending on the person you may be more or less sensitive, chemical insults can just the same trigger the amygdala and the fight or flight response. Even if you think I am fine, I am safe, there is no problem here, you're psychologically completely grounded, and you're in a great spot. You can smell a chemical trigger. And literally, there's a direct link through the cribriform plate, through the HPA access, that takes that chemical and triggers a fight or flight response.

This, to me, is fascinating because, for decades, I have known that mould causes this really trauma response, and every patient I've ever known, including myself, that's a whole other story. But all that to

say that I've seen this, and I've seen, we can take care of the mould-related illness, get them out of the environment, start to heal in detox, but there is this trauma piece of mould that unless I help the patient deal with that, they will remain in this fight or flight cycle. Even if they get an exposure, and they know they're okay, they know they're safe. So when I kept seeing that, I was like, what is this deal? Because they can have all the therapy, all the somatic, all the things in place to keep them safe and healthy and in a good psychological place. But still, when they smell toxic chemicals or smell mould, or they feel like they're in a mouldy environment, their body will freeze or fight or do something in the trauma response. And then I started to understand, oh, we, literally, can have a trauma response to a chemical. And it, of course, makes sense because our body's just trying to protect us. But that was a big "aha!" for me, because think about nowadays- we are swimming in toxic soup. So you ask about the state of our nervous systems, we can do all the work, all the therapy be so enlightened and we still walk out in the world without the air filter and the exhaust comes by and the fumes come by and the mould comes by in the buildings and we can have the same nervous system response just from the chemical exposure and we're all getting it every day.

Kirkland Newman:

It's so true. But how do you explain that some people react so much more to it than others? So, for instance, I grew up in a mouldy home. I've been exposed to mould my whole life, but I got really mould-sick when I was 50 and basically, and I'm still recovering from that, but I'd been exposed to mould my whole life, and it had never really affected me. And then, all of a sudden, I started developing neurological problems. So muscle twitching, tremors. And this was really scary because I thought, "I have MS. I have Parkinson's." And so, first of all, how do you explain that some people are more sensitive, and what triggers that? And second of all, once you've fixed it, because I fixed my mould issue, I'm still having reactions, and I'm wondering if it's almost like an autoimmune thing that keeps going, and I'm not sure about that. So tell us about those two issues.

Dr. Jill Carnahan:

Okay, I love, again, love your questions. First thing is load. So when we think about toxic load, I always describe it as we're all born with a bucket capacity to detox. And as we grow, that bucket starts to fill up. For example, for me on the farm, I'd get probably organic phosphates, water that was contaminated, other toxic exposures, and it built up, and mine did manifest early at 25. But my bucket started to fill up, and it presented with cancer when the bucket got full. And the common things we see with the bucket load, that toxic load being at the limit again, it's almost like the water fills up, and when it starts to spill over the top, we see cancers, we see autoimmunity, and we see neurological neuroinflammatory things like Alzheimer's, Parkinson's, ALS, MS, et cetera. So these things are the most common.

There's a lot of other things that can happen, but that's the idea of toxic load. For me, it happened in my twenties, but you could go in your twenties and thirties, and on and then all of a sudden, at some point, your load got higher than your body could keep up with bailing out the boat. And when that happens,

that threshold hits, all of a sudden, it's the straw that broke the camel's back, and you start to present with illness. That's one piece of the puzzle. And that's why some people in their twenties, thirties, forties, fifties, even on just first present with toxicity where they didn't before because they had the capacity to bail out the bucket until it got too hard or too heavy.

The second piece is unmasking. As you start to treat, this happens with all my patients and probably both of us, as we start to get out of the toxic environment to heal our bodies from mould, do the detox things, we know to unload the body and the tissues, we actually, I call it unmasking, but it basically for a time, and it can be years, you actually become a little more sensitive because you've created margin in your bucket again and you can actually tell if it's full, you're like full up, you can't tell you're just overloaded. But as you create that margin again, all of a sudden, you can actually unmask that sensitivity that was probably there but became a little sensitised in the process. Usually, it does get better. So the idea is that you go through detoxification, sometimes you get a little unmasking and sensitised, and that could be several years, and then eventually you get less sensitive. But for example, I'm in your boat too. I had a massive mould exposure about five, six years ago, and I still react to mould. I can get over it quicker now, and it doesn't take me down as much, but I'm still very sensitive. I can tell hotel rooms or places I'm like, "This isn't right." But it also is a gift, just like all of these things. The gift for you and I is that sensitivity allows us to go into the world and be better protectors of ourselves. Whereas, before, we maybe wouldn't have noticed. Now we're like, "Oh, this building isn't good. I need to get out." So those are some of the pieces of the puzzle.

Kirkland Newman:

It's so true. And so, is it a load issue, or does it also have to do with stress? Somebody once said it's when you have periods of extreme stress, then that sensitises you more to the toxic load, or is there also a genetic factor at play?

Dr. Jill Carnahan:

Oh yes. So you're just going to all the right spots to talk about this. So two things. First of all, genetics play into this, and for sure, for me, and maybe for you, there's about a quarter of the population that has trouble tagging toxins like mould with their immune system so that they can eliminate them properly. So their antigen presentation symptom is impaired in some way. And so they have more trouble having the immune system say, "Hey, this is a bad guy. Get rid of it." And so what happens is those bad guys, the mould spores or mycotoxins, start to circulate in the body, and it's hard for us to eliminate them, and then we become sensitised, and it creates a vicious cycle of that cytokine storm. So it's actually our own immune system doing a lot of the damage. But it gets triggered, and it keeps going around and around like a merry-go-round because our body has more difficulty removing those toxins. So that's one thing. The other thing you mentioned is trauma and the psychological-

Kirkland Newman:

Stress.

Dr. Jill Carnahan:

Yeah. Stress. And yes, the stress absolutely affects the cytokine response. And what you mentioned, alluded to, that I think is so important too, just like you mentioned with childhood. I look back, I was in a farmhouse, part of the cellar was actually dirt, there were lots of different things, and I bet I had massive mould exposures. I was on a corn and soybean farm, and corn and soybean often have mould on them as they are dried in the bins and things. So I think what happens is if we have any sort of trauma, just even normal childhood events that are traumatic but fairly normal like the little t traumas, and we have exposures, we start to link those in our brain and nervous system. So then, later in life, it brings up. So, for example, say we have a difficult relationship, and we're in a mouldy home. And often, those two things start to become linked in our nervous system so that when we get a mould exposure, again, our body remembers, oh, last time this exposure happened, I was in a difficult relationship, or I had whatever happened. And we can start to link those over time as well. I think of it as the old wagon wheels out in the west. They used to actually follow, and they'd get these grooves in the dirt that were inches thick, so the next wagons could follow. And they became just massive. It was the old-fashioned roads, but it was just dirt and mud. And these ridges can happen in our nervous system too. So we, literally, need to reroute the wagons out of that pathway because the body just keeps going the same path, same path, same path. And it starts to think, oh, whenever you smell mould, this is dangerous. My body's going to go into alert, but it's because it's linked to past trauma.

Kirkland Newman:

That's so interesting. And also another thing I notice is that, for instance, now, in principle, I don't have mould anymore, but I'm still reactive. My symptoms get a lot worse when I don't sleep or when I'm particularly stressed. And so that makes me wonder, okay, what is it in my immune system? Is it the cell danger response? Is it the inflammation of not sleeping? What is it that means that once you're in that space of being sensitised, that you react to the smallest things like not sleeping? And for me, my symptoms are so clear. I mean, tremors and muscle fasciculations that it's very obvious to me when something's triggering that. And I'm just curious about the mechanism because once you are sensitised, then everything that's slightly inflammatory seems to cause this reaction. I mean, does it ever get better?

Dr. Jill Carnahan:

It does, but it can be a long, and again, I've been through this too, Kiki, and it can be up and down, and just when I think, "Oh, I'm great, I'm so healthy and thriving," something will hit. Or I joked the other day with some friends, "Are all boys mouldy?" Because when I've dated off and on, it seems like I keep running into men that have mouldy homes, and then I get a reaction like, okay, I can't date you. This whole story of that's a joke in some ways, but some ways not because it's so common, but one of the things that I think is maybe going on that's super common is I really feel like almost all functional medicine boils down to toxic load, which we're talking about or infectious burden. And so what happens

in this is we all have these old Epstein-Barr, old Chickenpox, old whatever, old HHV-6 childhood viruses, or we got bit by a tick or a spider or mosquito and got Babesia. One of these, we'd call them tick-borne infections. But a lot of them like, Bartonella, can be cat scratch or can be mosquitoes or spiders. They're not all ticks. And we don't know, often when we got bit because there's a lot of times no signs or symptoms at the time. So many of us are carriers of old infections. In fact, we probably wouldn't be human if we didn't have something that we had been exposed to. I have never seen a patient ever that didn't have old viruses or old types of infections.

So how this goes together is those old infections when our immune system is robust, when we're sleeping, when we're no stress, those are just kept down by the immune system, just keeping them in check. They're not bothering us. We don't know we have them. But what happens is when we're stressed, when we lack sleep, or when we get a mould exposure, that bar of the immune system drops, and these old infections start to percolate, and they can cause similar types of things like fasciculations or nervous system manifestations, neuropathies or brain fog or fatigue or whatever types of things we have. And they pop up, and it might not be the mould or the stress, or the sleep. It might look like that. But what happened is those things triggered a weakened immune response, old things popped up, and then they pop back down. As you get stronger, you get your sleep back. So I see those two interplaying, and I wonder, sometimes, if what we think, same with me, of mould exposure is actually a weakened immune system due to mould, and then an old infection stuck its head up and started causing symptoms.

Kirkland Newman:

I think that's so true because I have reactivated Epstein-Barr, and I keep thinking, why can't I kick this darn thing, and is it the mould? And so it's fascinating because so many of us, as you say, have these pathogens, whether it's herpes or whether it's Epstein-Barr, and the interaction of these pathogens, whether it's a bacteria or a virus with moulds and heavy metals as well. I mean, my mercury is through the roof, and I think, well, I don't eat fish. Why am I getting such high mercury? I'm not exposed. Apparently, there's an interconnection between the mould and the mercury. I don't know if you can explain that or if that's, you see that commonly. But it's tricky because all these things interplay and feed off each other.

Dr. Jill Carnahan:

It is, and it's like whack-a-mole sometimes you like whack one mole, and the other guy pops out. And so common what you're experiencing and what myself and many patients... Mercury and fungal elements or candida and mould can be synergistic because candida especially, I don't know about mould species specifically, but all the fungal elements can convert inorganic to organic mercury. So there's a kind of synergy relationship with them. It actually protects us a little bit because the other is more toxic. But often, what happens is, because they're symbiotic, if we don't really clean up the mercury or clean up the fungal burden, it can be a little tricky to get over that. And if you detox too quickly from mercury, you

can have fungal flares, or if you kill off all the fungus and yeast, you can have more mercury toxicity. So those two together and they can be a pursuit that you pursue. Not lifelong, but it's not necessarily one easy one-month protocol that gets it out.

Kirkland Newman:

Right. Absolutely. And that brings me to the next question, which is really, what do you do about this? What are your top tips for detoxification, both, in terms of pathogens and in terms of toxins?

Dr. Jill Carnahan:

So it's interesting because I've been teaching this for years, and I started doing lectures in the last two years, starting with the limbic system because of this whole connection. And again, your audience, your listeners, you yourself know how important this is. I am not the expert, but I have just enough information to give referrals or give references or give books or give suggestions and have the patients find their way. But I want to start there because, like I said, there's always this trauma link with old infections, old toxins. It's part of why you and I might have had a little bit more of an issue, and maybe our neighbor didn't, or our family member didn't. So there are differences in our response. But limbic types of things, just a nutshell, any sort of binaural beats, cranial sacral therapy, there's lots of programs out there, like DNRs and Gupta program, and they recalibrate the system. But I always say if you're a type A person, or I have a patient who's a high-functioning driven person, they don't need one more to-do of an hour per day to listen to a protocol. So sometimes the passive stuff, because then you give them this program, they're like, oh gosh, now I have another program I have to do every day for one hour. So I am not a big fan of some of those programs. I'll not name them, like a DVD for an hour a day. I don't think that's helpful for someone who's already overwhelmed.

What I do think is something receptive. So go get a massage, get lymphatic drainage, get cranial sacral therapy, go walk barefoot on the beach or even on grass or something where you're actually taking in goodness, and you're not giving yourself more to do. Because for some of us, like myself, that just adds to the trauma because I'm already overwhelmed with all that I have to do. But there's lots of things in that realm that you can do. And any somatic behavioral therapist or any trauma therapist will know and have resources. And anyone in that realm can do therapies like EMDR, thought field therapy, brain spotting, and there's many, many, many more that can help to reprogram that trauma response. That's first, right along with that is, get out of the exposure. So if there's mould and you're really in a place that's toxic, you don't always have to leave your home, but you have to fix it, or you have to stay away from it. Because if you're in that home in that exposure, there's no amount of bailing IVs, drugs, nutrients, therapies that are going to take that out of your body if you're still getting exposed. It's just a no-win situation. And because that's creating inflammation, you have to give yourself a breather or a break, kind of like a little retreat away from the mould. And again, for some people, it's just remediation work.

The key with remediation, I'll talk just briefly because it happens so often that it fails, is that when you take, I think of it as like a dried flower. If you flick it or blow on it, just fragments into a million particles. Mould is the same. So say you have dead, dried mould behind this wall here, and I need to go in there, cut it out and patch it up and repaint and everything. If you just have a remediator, go in and treat the wood and take out the mould and do it under containment and then leave your house, and you're like, "I'm good." You're not because what you've done is you've blown apart those dried fragments of just dried flowers. They've gotten all over your HVAC system. They've gotten all over your home. You must fog and clean to complete that process because those fragments of dead, dried, gone mould are still going to be immune triggers. And that's where people get into a lot of trouble because it's hard to get a house really, really clean.

Kirkland Newman:

That's so true. I mean, the mould thing, the remediation is a bit of a nightmare. And I hadn't realised, but dead mould spores are actually just as inflammatory as live ones, but nobody tells you that.

Dr. Jill Carnahan:

No, I know.

Kirkland Newman:

The remediation is key. Getting out of the environment. And then, in terms of supplements and diet, et cetera, what would you recommend?

Dr. Jill Carnahan:

Yeah, so, I, still, this is controversial. I still recommend a low-mould diet. Not everybody has to do this, and you don't have to do it perfectly, but if you're eating super high sugar or high mouldy foods, you're not going to feel well because many people not only have that exposure, which is one thing that triggers the immune response, but they can have colonisation in the sinuses or the gut, which means they actually have mould or fungal elements living in their sinuses or their gut. If that's the case, which I guess is 30 to 40% of the patients who have mould exposure, then feeding them a lot of sugar or a lot of mouldy foods is not going to end well. One other thing that can happen is histamine, people can have mast cell activation, which is a trigger for excess histamine production by the mast cells. Mould is a huge trigger for that. And then, they may feel better on a low-histamine diet.

And Kiki, if any of your listeners want to know on my website, I've got so much free stuff, just like for what to do if you have mould exposure, what diet to eat. So all these things are on there. It's just my name, jillcarnahan.com, and it's all free. But if you want more information about what specific diet and what specific steps to follow, it's all there. So you want to get all the exposure. You want to eat a low-sugar, low-glycemic diet. And then, as far as supplementation, what you're trying to do is you're trying to mobilise toxins from your tissues and then eliminate them or excrete them. And the basics of

that are you need to enhance your liver, phase one and phase two, things like glutathione, N-Acetyl Cysteine, lipoic acid, milk thistle can be real powerful. And if you can't take glutathione, you can do precursors. Even vitamin C is helpful. So simple, simple things. You want to support the immune system. Vitamin D, vitamin C, zinc, of course, we're familiar with that. If you have mast cell activation, you want to do things that are antihistamines like Quercetin or nettles or Chinese skull cap, or you might take an H1 or H2 blocker or a mast cell inhibitor. So any of those things can be helpful if you're real, real reactive. And then you want to start to eliminate by binding these toxins because, as I mentioned before, if they just circle around in your body like a merry-go-round, they continue to cause damage. And so how you do that is through things that have an electrostatic charge like clay or charcoal or glucomannans or chlorella. And you can do a combination, you can do prescription binders, and you take those binders on an empty stomach so that they start to pull out from the bile acids, pull out the toxins and eliminate them through your stool.

Kirkland Newman:

That's fantastic. I mean, that's so helpful. And in terms of pathogens, viruses, Epstein-Barr and herpes and also Lyme tick-borne disease, which are usually bacterial, what would you recommend there in terms of getting rid of them? Those can be really pernicious as well.

Dr. Jill Carnahan:

Absolutely. And this is a whole weekend course, but I'll give you some pearls here. First thing is you do want to know the basics, are you doing viral, is it Babesia? Because each thing has a different range of what would, maybe, treat it. And I would start with your doctor getting either organic acids or a stool test or assessing the gut microbiome as well. And then maybe some testing. I do a ton of testing through routine labs. Like here in the US, it's Labcorp, Quest or a hospital lab. And you can do almost all the infections. They're not always the most sensitive, but if you have insurance and that's the only thing you can do, you can start there and get an idea. Do you have Epstein-Barr, like you mentioned? And I've had the same, that's a real common one.

So virally, I like Monolaurin and olive leaf lysine can be helpful. And taking doses of those, there's lots of herbal tinctures. And with Lyme and tick borne infections, I've gone the full spectrum. Years ago, I didn't want to do antibiotics to hurt the gut. And then I realise some of my patients really need antibiotics, and I do treat with antibiotics. But now I found with all these viruses, fungus, bacteria, Lyme, herbal concoctions can often work just as well or better because they treat a broader spectrum and they're a little bit more gentle in tick borne infections. There's a lot of stuff, a lot of studies. Cat's claw is particularly good. Japanese knotweed, Cryptolepis, there's more, but those are probably the top three that I use.

Kirkland Newman:

That's fantastic. So I mean, to summarise, essentially because it's psycho-neuro immunology, it's essentially, you have to deal with your nervous system, deal with your trauma, stay as much as possible in parasympathetic. And then, you also have to treat the infections and get rid of the toxins. And then, in principle, how long does this take? How long do you see in your patients that it takes to get them better? I mean, I guess it depends, but generally?

Dr. Jill Carnahan:

Yeah. Oh, this is the question. It's funny because the patients always ask too, how long is this going to take? Mould, for example, I would say six to 18 months is a pretty reasonable assessment. So it's not quick, but it also is doable. It's not decades, and it's not more than, I mean, you can get very well within 12 to 18 months, But you're looking at, like I said, you're looking at these layers, and you want to know in the beginning is the exposure the biggest thing? Usually, say you have infections, and you have toxins, and you have mould, and you have what order do we go in, right?

Kirkland Newman:

Yeah.

Dr. Jill Carnahan:

So you always start with some sort of limbic or somatic stuff while you're doing the rest because it's going to help you get through. Mast cell activation is at the top of the list because you can't do many treatments if you're super reactive. So I always try to calm the mast cells down first. Second would be mould in that environment because often like we said, the mould will cause those infections to pop up. So if you treat the mould, there's times when you don't need to treat the infections because when the immune system's back online, those infections are taken care of by your own immune system. And then thirdly, if there still remains residual tick borne infections or viral reactivation, that would be the last piece that I would deal with. And metals would come somewhere in there towards the end, not at the very, very beginning.

Kirkland Newman:

That's so helpful. I mean, that's fantastic. And then another issue that I encounter a lot because I meet a lot of conventional psychiatrists through my work, and a lot of them are very negative when I mention this. I have a friend who is a psychiatrist, and he calls himself a psycho neuro immunologist. I mean, he's big into that, but he says there's no evidence that we can't treat people because there's no evidence, there's no evidence that really there's a link between certain viruses and mental health issues. There's no evidence that there's a link between certain toxins, et cetera. Now when I argue with him, he says, well, no, there's just not enough evidence, and the only thing we can treat with really is SSRIs and CBT. And it's the conventional approach. What would you answer to that school of thought?

Dr. Jill Carnahan:

Yeah, I love it because I remember in undergrad and doing differential equations and some of these things that were so advanced, like physics for engineering, I was an engineer undergrad, and I remember for the first time in my life I was like, "Holy cow. I thought I was able to learn, and I thought anything is learnable." Right? So I just spent more time, spent more brain effort, and anything had been achievable prior to that. Now I still did well and got through those classes with like a B minus, but for me, that was the first glimpse of the complexity of the equations as it grows. This is crazy complex. And what we're dealing with is a level of complexity that doesn't fit a randomised controlled trial. There's so many variables that it is impossible to put it in. And then you take the individual genetics and metabolomics and proteomics, all these different things, epigenetics, and there's so many factors for each, I call it N of one. Because in the study of N, that's the number of subjects in your study. So each of our Ns that walks in the door is so unique with so many variables that it would be impossible to do a trial that would adequately address all those variables. So for me, it doesn't mean that it lacks evidence in the sense that I'm doing things without evidence. But if we're going to be at the cutting edge of these super complex chronic diseases, for me personally, I'm willing to push the envelope. And as long as I feel the safety is there if it has potential benefit, I'm willing to try, and guess what? This is the line where we see miracles.

I mean, I want to cry because, in my own life, I stepped on that line so many times and things that people said, there's no evidence we can't do this. Whether it was my cancer treatment, how I did it, my Crohn's, that diet has nothing to do with it. And I'm like, well, why not? Why can't we try this? And it's my body, I can do what I want, so I got to choose, right? And patients get to choose as well. But I went on that line of maybe minimal evidence but no risk or minimal risk. And I found these magical things that transform, I say magic. It's not magic at all. It's just, in my mind, it's that going on the edge and treading where the average doc is not treading and trying new things. That's where we make discoveries. That's where we see spontaneous healing. That's where we see things like my cancer and Crohn's that should not be gone are gone. But it only happens there. It does not happen in the box. It does not happen in the massive randomised controlled trial because that's where it's safe. That's where the average person stands, but who is really average? So I'm a big advocate of science. I founded my practice and everything I do on science, but I'm also willing to step outside the box and to do things differently because that is where we see new discoveries and new things happen.

Kirkland Newman:

It's so true. And I told him, I said, I don't care if there's not enough evidence by your standards. I mean, it works for me, and it works for people I know, and it's criminal in some ways, and I'm such a big advocate for changing the paradigm of the way mental health, in my case, but of course every case, all health is treated and diagnosed because I think that especially in mental health, we're in the middle ages in some ways. In the way that we treat mental health conventionally through treating the symptoms rather than the causes, and I'm just wondering, I mean, I get frustrated sometimes, is this going to change because I believe that it will change and in 10 to 15 years psychiatrists will be doing these lab tests and we'll be treating in a much more biochemical way, and looking at the whole picture, but I sometimes get

discouraged. I mean, what is your view? Do you think things are changing, and are they changing fast enough?

Dr. Jill Carnahan:

I couldn't agree more, but I think what's happening, and especially our pandemic showed our weaknesses, it showed some strengths, and it showed some weaknesses. But what happens is now what I've seen, and it's scary, but also, I'm excited. I'm trying to embrace it. The idea 20 years ago was physicians have this knowledge base, and you go, and you see the doctor and get this wisdom. It's not like that anymore. There are influencers that have no medical degree. They're spouting out wisdom online that probably have no business doing it, really, but they also have a voice. And the voices, now, are different because it doesn't matter if you have a degree or not. If you have enough followers, you might have a voice, and you have no background or vice versa. You might have a brilliant, incredibly bright, amazing genius out there that doesn't have a voice because he doesn't have a platform.

So what's happened is it's leveled the playing field. And the good news about this... there's a lot of things I don't like about this, but the good news is the public, the perception of what's right and wrong and our own personal experiences with what helped us to heal is starting to become a voice out there that actually matters. People are writing books about it. Things are changing. So I think that level playing field, and it also causes us as physicians, for me, I go in, and I want to say, "You know the answers to your own body, let me listen to you more carefully because you probably know more than I do." And if we come with that humble attitude as collaborators instead of someone that is an authority and the other person is not, we can learn great things. So all that to say, I think things are shifting. I think the authority is changing. And I think the voice of the people if they demand cleaner water, cleaner food, cleaner air, we want new solutions. We don't want just drugs, does this work? Let's try this. I think it's going to shift, and it doesn't change that there's still science.

Kirkland Newman:

Yeah, absolutely. And I know you have to leave, but if I can ask you one more final question. If somebody came to you with a mental health issue, where would you start, and given our discussion on psycho neuro immunology, I mean, is that someplace that you would start, or where would you start? Because it is so complex and people are so overwhelmed. If somebody were to come to you with mental health issues, what would you start with?

Dr. Jill Carnahan:

Well, first, the history is so key because if I really listen to their story, when were you last well? Do you remember ever feeling better than this? Often there's these clues, like a change of environment, or I got sick, or something happened traumatically, or I lost a loved one. There's these clues, and so I will go into those clues. But a natural answer is I still start with the gut because the gut. I remember, years ago, college kids would come with depression or anxiety and there would be mental disorders or mental diagnoses, and I'd say, well, we need to do a stool test. And they'd look at me like I was crazy. But the

truth is, I always got more traction by starting with the gut immune interface, which is psycho neuro immunology. And then they would feel better, and they're like, I don't know how this worked, but by changing my diet, getting rid of gluten, dealing with the dysbiosis, and then whatever things we did. And then, I would go onto the deeper levels; the environmental toxicity, the old infections. But I would do just what we talked about here for mental health. That's exactly how I would start. And granted, I prescribe SSRIs. I prescribe medications all the time. I have no problem, but I always feel like those are a crutch or a bandaid, not in a bad way, but say you have a broken bone, you need a crutch. And I have no problem with doing that and supporting because often they come in and they're in crisis. And if I want to heal their gut or get them out of mould or heal their infections, I know it's going to take, as we said, minimum six months. I don't want them suffering. So we'll talk together. Now I have natural ways of doing that too, so it doesn't have to be a medication, but I have no problem using medications, benzodiazepines, or SSRIs, or you name it because it gives them some relief from their suffering. And then we have time where we can go deeper. And what I like, it's not for me to say, okay, go off your med. Now I like, and I have this probably 90% of the time, the patient said, I felt so great, I talked to my psychiatrist, I'm off my meds. They decide, and they go off them, and they feel better. So that's the ideal is when they themselves make that initiative, they've done so well in their progress that they're like, I don't need these anymore. And with my doctor or psychiatrist, I weaned off them, and I feel great.

Kirkland Newman:

And I think that's really the missing step, is a lot of traditional psychiatrists will give the antidepressants and the tranquilizers and the mood stabilisers, but then there's no plan behind that to figure out what are the root causes and what's the exit strategy essentially.

Dr. Jill Carnahan:

Yes.

Kirkland Newman:

You know the long-term strategy. Jill, you've been amazing. I know you have to go, so I will let you go, reluctantly, because I could talk to you for hours. You're such a font of knowledge, but people can find you. You have a fantastic website with amazing blogs and amazing resources, and I've spent a bit of time on there, and it really is a treasure trove. So it's your name, drjillcarnahan.com, and we'll put that in the show notes. But thank you for everything you do. Thank you for everything that you are. You're an incredible human being and a real inspiration, and I'm very honored to have you on my show. So thank you.

Dr. Jill Carnahan:

Thank you, Kiki. It's mutual. It's been worth the wait, and we'll have to do it soon again.

Kirkland Newman:

The MindHealth360 Show - Dr. Jill Carnahan

I would love that. When your book is out, I would love to do another one.

Dr. Jill Carnahan:

Yes.

Kirkland Newman:

So yeah, exactly.

Dr. Jill Carnahan:

Thank you. Thank you so much.

Kirkland Newman:

Thank you so much. Have a wonderful day, and thanks for being with us. Take care.

Dr. Jill Carnahan:

Bye.

Kirkland Newman:

Thank you so much for listening to the MindHealth360 show. I hope that we've helped you realise that mental health symptoms have root causes that can and need to be addressed in order to sustainably heal, and have given you some ideas about steps you, your loved ones, or clients may take to start their healing journey. Please share this interview with anyone you think may find it helpful and don't forget to subscribe to keep up to date with our latest interviews on integrative mental health. If you want further information, please go to www.mindhealth360.com or find us on social media. This information is for educational purposes only and is not intended to diagnose or treat any disease or to replace medical advice. Please always consult your healthcare practitioner before discontinuing any medication or implementing any changes in your diet, lifestyle, or supplement program.