165: Dr. Jill interviews Dr. Jill Crista on A Healing Plan for PANDAS and PANS

Dr. Jill Carnahan 00:12
Well, hello, everybody! Welcome to another episode of Dr. Jill Live. Today you've got a double treat because you've got Jill squared. Dr. Jill Crista and I are here today. We love to laugh and joke about that, and we actually really genuinely like and love one another. One second. Echo—it's so funny. Okay, well, everybody, if you're live, you're witnessing the bloopers.

Dr. Jill Crista 00:38
That's the way life goes.

Dr. Jill Carnahan 00:41
Exactly! I'm going to give a quick intro for the recording. So hello, everybody! Welcome to another episode of Dr. Jill Live. Today you've got a double feature and a double treat with Jill squared; Dr. Jill Krista and I are here today. As I said a moment ago, we genuinely love one another. We were just talking about collaborating in this world. And it's really interesting because we have different training backgrounds, but we are so aligned in so many of the ways that we think about...

Dr. Jill Carnahan 01:06
And I just want to say publicly, Dr. Jill, that I always learn something from you every time I hear you. We're both teachers in these realms, so I go and lecture, and I do podcasting. But the secret of it all is that so often I actually learn a ton. It's a total pleasure and joy when I get to talk to people because, usually, my education is expanding. And I'll just say one thing in particular: Not too long ago, you did a mold... It was a weekend seminar that was fantastic. One of the things you mentioned that I'm now sharing with my patients is thyme inhalation.

Dr. Jill Crista 01:41
Yes! Oh, wonderful! Isn't that amazing?

Dr. Jill Carnahan 01:44
It's amazing! And before I introduce you, let's just really quickly talk about that. Maybe I'll let you tell [us] what it is and how it relates to mycotoxins. I was having these people [to whom] I give anti-fungal herbals or anti-fungal prescription sprays because a lot of the colonization, as you and I know, is a big deal. It's almost like you take the mold with you. And they're not getting better and not getting better, and

[they're] like, "Why am I not getting better?" And obviously, if you're colonized, you take it with you, and that can produce mycotoxins and actually affect you [despite being] away from the mold exposure. So the solution is to treat that, but I was coming across people who would get very bad reactions. So go ahead and tell us just a little bit about that thyme inhalation and why it's a game changer.

Dr. Jill Crista 02:21
Yes. I've got to say 'thank you' to my teachers. I always learn from you, too. And everyone has a way of saying things that, even if it's something that my thinking brain kind of conceptualized, I didn't own it until I heard some people say it. So I just want to acknowledge back that you are one of my teachers too.

Dr. Jill Crista 02:41
So my teachers in hydrotherapy taught me this in naturopathic school. It's using thyme—the herb or the essential oil. You can use it in all different ways; it could be fresh or dried. But taking a component of that thyme and adding it to boiling water and then tenting your head with just a good old flower sack or towel and just doing the inhalation. I've seen this knockout MARCoNS. I've seen it knock out MRSA, COVID, and all kinds of stuff. It makes sense because our sinuses are caverns and caverns and caverns of them. A spray can only get so far, whereas a vapor can get to all of those tissues. It can get to those back crevices and things like that.

Dr. Jill Crista 03:25
You basically just tent over it and stand over there for five minutes or three minutes. It kind of depends on what your body can handle. You do want to close your eyes because it's a little stingy on the eyes. You can do it multiple times a day for people who are really congested. And for people who get really congested when they go to bed at night, you can do it before you go to sleep and then you can breathe through the night. So it's just a lovely treatment.

Dr. Jill Carnahan 03:47
It is a wonderful pearl. And it's on YouTube. So if anyone's out there and wants to see the video, I've been sending my patients that link.

Dr. Jill Crista 03:57
That's my son doing it. I was like, "Oh, can we take a video?" because he was congested.

Dr. Jill Carnahan 04:01
I love it! Yes, so thank you for those kinds of pearls that you're helping all of us with. Now I'm going to go backwards and formally introduce you. Dr. Jill Crista is a pioneering naturopathic doctor, bestselling author, devoted educator, and creative innovator. Her superpower is to make complex medical concepts simple and adjustable for the average person. Her passion is to elevate the well-being of the planet by way of her inhabitants. Her books and online courses support those wanting concrete steps to conquer health challenges.

Dr. Jill Carnahan 04:32
She focuses on conditions that cause injury to the brain and nervous system, including mold—which we both love and hate, right?—PANS/PANDAS, Lyme disease, and concussion. So again, the nice thing is that we treat so many similar [things]. I always think that the complex chronic illnesses that we see in people who are at the end of the road and have tried other things are usually in our offices. In my mind, it's always the toxic load, the infectious burden, and the interplay between those two, which is mold and Lyme a lot of times.

Dr. Jill Crista 04:58
Yes, and then you add the triad of trauma. Even if you didn't come into it with trauma, the experience of it is traumatizing. So yes, it's that. And I know that's what this is all about right here.

Dr. Jill Carnahan 05:15
You're right. And that's been my personal journey because I've been through mold; I had Lyme. It's all under control. But that was part of my aha—my own experience realizing I did all the right stuff and I got to 80%. And then that last 20% was elusive until I went inside and started to feel again. I was living above the neck in the analytical mind, and then I started somatically experiencing. And one of the things in the research of the book that I found, and I know you see this as well, [is that] we know that having mold exposure and the subsequent health issues are traumatic.

Dr. Jill Carnahan 05:47
So that's one thing, right? But it's not a psychological trauma. There is data that shows chemical inhalation on the HPA axis, and our amygdala literally triggers the limb response. So even if you're emotionally totally connected and you have all

these wonderful resources—friends, family, and a therapist—just a chemical inhalation can trigger trauma physiologically. That was a big aha for me because I realized 100% of our patients who have chronic, complex illnesses have to in some way incorporate trauma healing.

Dr. Jill Crista 06:18
Oh my gosh, you said that so well. Thank you so much for bringing that up. There can be that self-blame game that can start with this when you go down the 'why?' tunnel. And it's like, "Well, sometimes it is what happened to you, and it's time to just tell the body that you're safe again." But that's really hard to do when you have colonization, as you know. Our olfactory bulb, for those who are listening, is our smell nerve from our brain. It's a really circuitous nerve; it kind of goes all the way around the whole inner part of the brain. When you have mycotoxins, because they're fat-soluble, they can just ride that olfactory nerve right up to the brain.

Dr. Jill Crista 06:57
That's one of the four places in our brain that have no blood-brain barrier. There's no barrier to it, so the more you're in that mold, the more toxins you take on. And that is going right through and around the whole limbic system. So you can be, like you said, the most balanced person, and it just trips this trigger of trauma. Now you are the person who also has to deal with trauma, and you're like: "I don't have anything. I don't have any childhood traumas."

Dr. Jill Carnahan 07:22
Right! Like: "I had a good childhood. I'm doing well. My parents were amazing!"

Dr. Jill Crista 07:28
"Why do I have to deal with trauma?" It's like, "No, no, no. The chemicals… " So I love how you describe that—chemical trauma.

Dr. Jill Carnahan 07:32
Yes, you too. I love that you describe the nerve. And just for those listening, there's one particular person—someone on social media—who always comments. He gets really angry when I talk about this because he's like, "This is not a psychiatric diagnosis!" And we're actually saying the opposite. We're saying this is not psychiatric at all. It's not all in your head. It's literally a chemical thing. So I think it's

so freeing because it's not our fault. It's not like we're not well-adjusted. It's literally this thing that we just have to deal with.

Dr. Jill Crista 07:59
Right. And it doesn't need treatment. And there's the connection with the PANDAS/PANS. When those mycotoxins go up into that limbic system, they're also creating enough inflammation and immune confusion that the immune system, the microglia, starts to attack itself because it's trying to clear that toxin. It's almost like it's trying to prevent those toxins from locking in. And you get this autoimmune response that's causing brain attacks in the basal ganglia, which is part of our limbic system. So these kids live with constant fear, constant anxiety, torturous thoughts, intrusive thoughts, OCD, and tics. The whole confluence of symptoms has to do with that area of the brain being irritated. So mold is almost always in the picture of that diagnosis.

Dr. Jill Carnahan 08:50
So that's what we want to talk about today: PANS and PANDAS. Many people listening are really familiar and really educated, and they know what that is. You kind of described it, but let's go back and give a framework for that parent listening, or maybe a teenager listening, or maybe a dad [listening]. What would this look like? Typically, this can occur in adults too. Let's define: What is it? And then what would it look like in someone coming to the clinic for you or me?

Dr. Jill Crista 09:13
Yes. I get asked a lot: Why are there two names? So there is PANDAS and PANS. I think that there should be a third category that is Lyme-associated. So whether we call it 'PLANS'—pediatric Lyme-associated neuropsych. PANDAS is: Pediatric autoimmune neuropsychiatric condition associated with streptococcus. That's the key with PANDAS: Strep. PANS opens up that causal aspect to other infections. Us in functional medicine and naturopathic medicine are saying, "Hey, by the way, that's also toxins." That doesn't always have to be an infection. The infection is usually the last straw, but the toxins are what put the straws on the camel's back.

Dr. Jill Crista 10:01
And then there are some infections, like Lyme. That's the case with my kids. I have twins with PANS, and they're 23 now. But it all started when they were about 3

[years old]. And actually, it started in the womb because I had Lyme, and I gave it to them. So they never developed a normal immune system; they came into it with hypogammaglobulinemia, which means low immunity. So they had a more gradual onset. With PANDAS and PANS, there's an acute, abrupt change in the child. With the 'PLANS'—the Lyme one—or congenital infections like Bartonella or Babesia, that can be a more gradual onset.

Dr. Jill Crista 10:41
So I acknowledge in the book that I'm not accurately using the term PANS for my kids because there isn't a name for it, but the way that they look is similar. So what started it might be different things, but the way that it looks in the end is the same because we see the same changes in the brain and the basal ganglia. So while in the clinical criteria they talk about things like OCD, tics, disordered eating—those kinds of things—changes in behavior, and regression, when we pull parents in, what they're usually bringing kids in for is separation anxiety and fears. We might see urinary frequency, bedwetting, regression for sure, handwriting changes, behavioral changes, and social changes.

Dr. Jill Crista 11:30
So we may not necessarily see OCD in the way you'd see it in an adult, like frequent hand washing. You may see it. It's very much part of these conditions. But OCD in a kid can look different because compulsion is a behavior. Their obsession is this thought, and they don't necessarily have the insight, like an adult would, that "This is not a normal way of thinking." To think, "Maybe you're not my parent; maybe an imposter stepped into you," is something that an adult would be like, "Wow, I'm not really sure what that thinking is, but I'm going to avoid that person." But when it's a child and they have no choice, then they're going to have to act out that intrusive thought through a compulsion. And that can be acted out through fears. So fears are a huge part of this, which makes sense when we talk about the location in the brain. It's limbic, so of course they're going to have fears. Yes.

Dr. Jill Carnahan 12:25
What a great way to explain it, because you're right—the OCD in children doesn't always present like we would think. They're in their brains. When we talk about rumination or intrusive thoughts, it's like a record player [going] around and around and around. So inside they may be like: "Oh my gosh, I've got to close that

door," or "I've got to check the door," or "This may not be my parent," or whatever kind of thing.

Dr. Jill Carnahan 12:47
I also find in my moms and dads who bring in their children aggressive behaviors, and some of these things are very out of character. Do you want to describe a little bit of how that can present? I find that the poor parent is also traumatized because they're dealing with this. They love their child. They want to be there for them, and their child is literally beating them up, sometimes even breaking bones and things. Let's talk a little about that to normalize [things] for the parent's experience. I have such deep compassion for both the parent and the child.

Dr. Jill Crista 13:14
I know. Yes. We can see aggression a lot, especially when there's Bartonella as part of that picture, because aggression, anger, and irritability are kind of part of the Bartonella picture. I think that just has to do with certain chemicals or cytokines that Bartonella induces in the brain and the limbic system. But it's quite common to see that. And the way that I think of it, it's like a cornered animal. So you have a child who has no choice and has little agency in their daily existence.

Dr. Jill Crista 13:45
And if you have a parent who's a strep carrier, no matter what condition you have—if it's PANDAS, PANS, or Lyme—strep then becomes kryptonite. No matter if it wasn't strep that started it, strep can be their kryptonite because it's the dominant respiratory pathogen. And lots of people are walking around being strep carriers because we have glyphosate, messed-up guts, and all those things. So if you have a parent, a sibling, a pet, or something like that who is a carrier of something that is agitating that immune system, my belief is that there are pheromones. And I'm finding more and more data.

Dr. Jill Crista 14:20
I have a practitioner training course on PANDAS and PANS. I'm finding evidence of these pheromones that can be mosquito and tick attractors. So of course, why wouldn't it also be something that's communicating to a sick kid through the smell nerve, "That's not safe; stay away from that person"? But if they're forced to be with the person and do things that they just don't have energy for and be with the pet,

who maybe is a Bartonella carrier, then it's cornered animal time. So then it's [manifested through] acting out toward the parent, the sibling, the pet, or those kinds of things.

Dr. Jill Crista 14:56
I think paying attention to behaviors tells you everything about what's going on with that kid. If it's repeated hand washing, I always tell the family, "Is that child having to wash hands for all of you?—because maybe you guys are all the ones that are carrying the germs that are hard on that kid, so they're having to do all of it for you." And it's amazing when the family starts washing hands, cleaning door knobs, and cleaning countertops—that repeated hand washing goes away.

Dr. Jill Carnahan (pre-recording) 15:23
Hey, everybody. I just stopped by to let you know that my new book, *Unexpected: Finding Resilience through Functional Medicine, Science, and Faith*, is now available for order wherever you purchase books. In this book, I share my own journey of overcoming a life-threatening illness and the tools, tips, tricks, hope, and resilience I found along the way. This book includes practical advice for things like cancer and Crohn's disease and other autoimmune conditions, infections like Lyme or Epstein-Barr, and mold- and biotoxin-related illnesses. What I really hope is that as you read this book, you find transformational wisdom for health and healing. If you want to get your own copy, stop by ReadUnexpected.com. There, you can also collect your free bonuses. So grab your copy today and begin your own transformational journey through functional medicine and finding resilience.

Dr. Jill Carnahan 16:19
Wow! That's brilliant, just like always. That makes so much sense! It makes so much sense! Interesting story: I was at the farmers market maybe a month or two ago with a really good friend of mine who is a neuropsychologist. All of a sudden, there was a commotion as we walked up to our cars. There was a police van and a couple of people standing there. My friend is such a compassionate, beautiful soul. She often goes towards [situations like] that because she's a neuropsychologist and she has the ability to reach in and help. I wasn't; I ended up leaving.

Dr. Jill Carnahan 16:48

But later I heard that there was this young man, about 17 or 18, and his sister and mother. He had bitten his sister, taking a chunk of flesh out of her arm, and his mother was a little bit bruised. He was very violent. And the beautiful thing was, in our city of Boulder, the policemen were giving him a bear hug and holding him down, but with such kindness and compassion. She came on and said: "Jill, I cannot believe our police force; how compassionate... " And they must have had some training because otherwise you would just handcuff this boy and take him off. It was totally like giving safety through a weighted blanket. The mom and the sister were there. They knew this boy. We talked, and later, after I heard this from her, I'm like, "Oh, that sounds like a PANS/PANDAS case," doesn't it? Or it could have been drugs or psychiatric.

Dr. Jill Crista 17:36
Or Lyme.

Dr. Jill Carnahan 17:37
Yes. He was young enough that... And it was one of those things where the mother and daughter explained that they dealt with this frequently. It wasn't uncommon. They both, of course, loved him, but they were also getting hurt in the process. Of course, there could have been other things involved, but it was a fairly young person with a family who knew that this behavior was common. And I loved that the police in our city were so kind and compassionate, because somehow they must have understood that this wasn't just bad behavior. And then my friend went in there and actually started explaining and helping the mother and daughter deal with their trauma. But in my mind, that would be exactly how a PANS/PANDAS could present in public, right?

Dr. Jill Crista 18:14
Yes because in public, if your boundaries are down... That's what starts this in the first place: Their immune system is down. They didn't have what they needed to deal with the last infection, and then you put them in a public place. So first of all, their fears are up—their sensory system. They are tuned in to "everything that is going to harm me." You put them in a public place, and then if there are any infections or toxins, it can just tip over the... We talk about the toxin cup. Each of us has a different-sized cup to handle those toxins, and you fill-up the cup or the bucket, and then it starts to spill over.

Dr. Jill Crista 18:54
Well, spillover in these kids' cases activates microglia in the brain, which is our immune system—the resident immune system of the brain. I call them 'monkeys,' so hashtag monkeys in the mind. And when they're mad, they not only scream. They recruit other monkeys to get mad, and they start flinging poop—so cytokines like crazy—and that can just totally short-out the brain. And a lot of times, these kids don't remember the acting out of it. So it's as traumatizing to the family who's receiving this as it is to the kid who snaps back in once that cytokine storm rushes through the brain and they see the result of their behavior or their action. And it's horrible. That starts the self-blame thing. And none of this has to be happening; it's all treatable. That's why I wrote the book!

Dr. Jill Carnahan 19:42
I love it, Dr. Jill! And this reminds me of a patient I had in the clinic. He was in seventh grade and had the same exact kind of behaviors. In the clinic, in front of me, he would cry because he knew he had hit his mother. His mother loved him, and he loved his mother. And he was realizing it. And of course, in the clinic at the moment, he was stable and the cytokines were down. I could see this interplay, and I had such deep compassion for both the mother and the son because he was realizing the extent of this behavior. He didn't want to be that way. It's what you see, right?

Dr. Jill Crista 20:13
Of course. They don't want to act that way; nobody does. Nobody would want to be that way and harm the people they love and those who love them. There's so much we can do. There are so many tools for these kids.

Dr. Jill Carnahan 20:28
There are a lot of clinicians who listen to us as well. What would you suspect? We kind of got a framework of what a parent might see in the kids and the OCD behaviors or other things that might present like OCD. What about a clinician—what questions might they want to ask? In what way would they maybe know that this could be on the differential?

Dr. Jill Crista 20:46
Yes. Again, I hope that people will see the clinical criteria and then think a little bit

broader than that. And remember: This is a clinical diagnosis. So you don't have to have a positive test of any kind. Tests are helpful when you say, "I'm not really sure [about] the complete target or the things that contributed to this." It's great to test so that you have that information. But basically, if you're seeing the things that fall into that clinical criteria, like we talked about: OCD, tics, eating restrictions, eating changes, regression, anger, irritability, bedwetting—urinary frequency is a big part of this even though it didn't make the clinical criteria—and fears, fears, fears, fears, and separation anxiety.

Dr. Jill Crista 21:35
And that may not be to a person; that may be to their room, their bed, their bathroom, or their toilet. We have some kids who don't want to leave the toilet. And to me, I'm like: "Well, then we already know what's going on with them; their microbiome is a mess, and we need to go there." You know, they're telling us: This is a potty problem. So if you're seeing that kind of pattern… And to be classic, it would be an acute, abrupt change from a completely normal kid, boom, and then something happened, and it seems like the kid was stolen overnight, so to speak.

Dr. Jill Crista 22:06
But if it doesn't have the acute [aspect to it], remember that there's this other third diagnosis category that we need to start defining, which is the gradual onset from congenital or from increasing environmental toxin load. So congenital infections but also congenital toxins because we can give mycotoxin—this gradual environmental load. And I know you were raised on farmland; you got all kinds of that. I was thinking of you this morning. The plane came over my house; he turns over my house. And I'm like, "Oh, yes, okay, I'm going to be talking to Jill today."

Dr. Jill Carnahan 22:46
And interestingly, I talked to my mom about this too. She had some chronic fatigue and migraines. Looking back, I'm sure that in utero there was a huge exposure. I don't know what percentage, but it's the same as what you're mentioning. I think that is something we actually don't talk about enough. And the year that I got diagnosed with breast cancer, which is over 20 years ago now, was 2001. That was the Canada study on cord blood that showed that out-of-womb babies were being tested, and they had over 200 toxic chemicals in their cord blood. This is plus 20 years later; it's only got to be worse than that. And that's chemicals, not infections!

Dr. Jill Crista 23:18
Right—not even adding in those infections. Yes, so if clinicians are seeing that, just remember that: See the clinical criteria. Open that up a little bit. The fears are definitely ever-present. Separation anxiety is there, [along with] urinary frequency. We see generalized abdominal pain, which again makes sense when we think about the toxins and the infection load. We see that in a lot of conditions that express those. And then the abruptness they may not have, but that's the classic case, is going to be an abrupt overnight onset. So if it's not abrupt overnight, that kind of informs you that this is probably not a strep-induced thing.

Dr. Jill Crista 23:57
Now we go looking for different types of infections to induce it. The flu is very commonly the thing that starts it. Mono in a teenager is a very common thing because the herpes family and mono is in the herpes family—as you know, I'm just sharing with others—loves the nerves. So that's going to be something that is a common neurological trigger for these kids. And COVID—now that we have COVID, it's right in the vagus nerve. It can get right into the brain through the vagus nerve. So that's become another big factor for these kids. If a clinician is seeing those, those might be the things that they're looking at.

Dr. Jill Crista 24:35
And parents, when you say, "Well, it's not abrupt," when you go back and look, there was probably an abrupt onset, but the kid covered it up. A classic Lyme one is that if there's a spiral to the tick, then you know there's a Borrelia somewhere in there—in my clinical experience. So if it's like this. And it just might be something that looks acute. They may work that because the obsession builds, builds, builds, builds, builds, builds in their brain. And then it's like they need to discharge it. So they might adjust their chairs and do this. And you're just like, "Oh, he's so full of energy." Or jumping when they stand up—jumping three times—or tics like that. It might be a vocal tic, so they might start humming. And you're like, "Oh, this kid loves to sing and hum."

Dr. Jill Crista 25:24
So it can look very mild and still be autoimmune—the whole inflammation thing going on. And if we can catch it when it's mild, if we can raise awareness that these

are things that are unusual, like having a kid jump three times when they stand up, that's neurological inflammation. Let's catch it now. Then you don't have to have the kid who ends up biting the sister at the farmers market.

Dr. Jill Carnahan 25:45
Yes, exactly. That was a really good overview—clear for clinicians, I think. So then, obviously, we have to look for infections and stuff. And I want to mention that you have a course, so we'll be sure to link that up. So if you want to know more, it's in the book *A Light in the Dark for PANDAS & PANS* by Dr. Jill Crista. So be sure to check that out. And we'll link you up to all your courses and stuff. But where would we start as far as the work-up? I'm sure the gut is involved. And then where would you start as far as treatment? So let's take us through those basics.

Dr. Jill Crista 26:19
Yes. Because strep is such a player, we definitely want to assess their reaction to strep. The key is, though, that there are kids who, because they're immune deficient, don't test well on antibody-based tests. So just know that there are zero negative PANDAS-positive kids, meaning that their blood can be completely normal and they can still have PANDAS or PANS. But I think strep is a really good thing to assess at first, and that would be the whole family because there can be strep carriers.

Dr. Jill Crista 26:49
So usually, [for] the kid who has the PANDAS or PANS, remember that strep is important once it starts because it's the dominant pathogen. Just because you had strep before… So one strep strain's immunity does not confirm immunity to any other strep strain. And strep has all of these endotoxins that are unique to that strain, so a different strep experience can induce different types of symptoms. So that's where you get the kid who moved from urinary frequency to tics to fears, and you're just like, "What is it?" Well, it can still be strep every single time because the endotoxins are so different. So I would assess the throat culture.

Dr. Jill Crista 27:32
What we find with these kids and with strep in general [is that] the strep antibodies are much more complex than we thought. So a rapid strep. If it's positive, it's positive. If it's negative, still follow up with the culture, because the culture is

needed in these cases. So that means the kid and the family. Don't worry about pets because strep is a human pathogen, but pets can carry it from a sick family member to another family member through licks—through saliva. So if you have a family member with a strep infection on their skin or something like that, or who has been kissing the dog, and then the dog goes over and kisses the kid with PANDAS, that's going to flare the kid.

Dr. Jill Crista 28:09
We typically see in a family the kid with PANDAS [where] strep is long gone, but someone in the family is still positive. Or they have strep on their bottom. Perianal strep is a very common hidden cause. And then the child is just continuously auto-toxing themselves every time they go to the bathroom. Or they might itch their bottom because strep on the bottom is kind of irritating and sore. So while they're sleeping, they may touch that and then touch their mouth. That's how they can get strep in their tonsils again.

Dr. Jill Crista 28:41
There's a lot of discussion about whether you give these kids tonsillectomies or not. And we have a lot we can treat that with. But if we've done all the perfect things—we've for sure cleared perianal strep with a culture, not with a rapid [test]—then they may benefit from tonsillectomy. But that's a clinician and family decision. But I've had many, many cases where they were slated for tonsillectomy and I said, "Let's just get started on some stuff and see," and they didn't have to have the tonsils removed. But there are cases where we do, and it really helps the kid.

Dr. Jill Crista 29:19
ASO and Strep Design are blood tests that we would use to see [along with] Anti-DNase B. Those are kind of like the "I have strep and I'm having a bad reaction to strep" kind of labs. Those are great to run. For classic PANDAS, I'm finding the Cunningham panel fits classic PANDAS better, but it's a very expensive test. So if you're having a hard time convincing family members or teachers to do a special learning plan or something like that and you need something on paper, that's one to use for a classic PANDAS case. I've seen it miss PANS and 'PLANS', or whatever the Lyme one is. So the strep picture [is something] you need to get really clear on for the kid and the family.

Dr. Jill Carnahan 30:04
And you would do that regardless of mold or Lyme because that's such a big trigger, even with the underlying toxicity and other infections, right?

Dr. Jill Crista 30:12
Yes.

Dr. Jill Carnahan 30:12
So strep—take care of that if that's present. That makes sense. What about—this is an interesting thing—with GBS-positive mothers? So group beta-strep is really common. They test every woman now with pregnancy and treat them. Is that a strain and could a baby coming out of the vaginal cavity through birth get strep?

Dr. Jill Crista 30:26
We don't have any studies, but those treating PANDAS and PANS say, "Yes, absolutely, there's a correlation." So moms who are group B strep positive definitely had higher rates of something neuroatypical happening with the kids. That's a great question. That gets missed a lot.

Dr. Jill Carnahan 30:48
Yes. Interestingly, I was one of those. [I was] five years old with the tonsils removed because I couldn't breathe. It was so bad—completely obstructing. And of course, now, in hindsight, I have an immune deficiency. I probably did from birth. So all this stuff is relative.

Dr. Jill Crista 31:05
I know! So many people! A lot of times the parents, or mom usually, are like: "Oh my gosh, could I have had that? Do I have this?" "Yes."

Dr. Jill Carnahan 31:14
Yes, exactly. Like, "Oh, yes." So then treatment, right? Obviously, what I love about you is that you always bring a lot of really natural pearls that I wouldn't have known because I wasn't taught [about them] in allopathic medicine. And I'm sure you start there. So how would you start? And then, obviously, if it gets severe, what would you go to for a prescription?

Dr. Jill Crista 31:33
Yes. So I wanted to put my core 10 things that I use with most PANDAS/PANS patients in my book, and I thought: "Oh gosh, think back to when my kids were sick. Ten things—I would read that and throw the book against the wall." So I was like, "Okay, discipline yourself, Jill." So I came up with the core four. Four things. The four basic things that we need to make sure we're paying attention to. Number one is: Tame the flame because anything else that we do is going to poke the bear, and that's going to cause more flame. So taming the flame. The second is: Beat the bugs. The third is: Regulate immunity. So we need that immune modulation. The fourth is: Guard the gates. So if we're not stopping the toxins, and if we don't get them out of the mold, they're not going to get better.

Dr. Jill Crista 32:22
So we have to do something to guard the gates—basically, I have the nasal gate and the throat gate—thinking about all of the ways that the body can be exposed. And then [there are] environmental exposures. So to tame the flame, there are going to be things that reduce inflammation in general that are specific to the basal ganglia, like pro-resolving mediators. I think of it as coating over a frayed nerve. So it just coats things. Because mold is often in the picture and there's often a histamine problem, while I would love to use whole fish oil, some of these kids have histamine issues and can't tolerate that. So we just use the pro-resolving mediators, which are very targeted. I describe it to my parents; it's the most anti-inflammatory part of fish oil that usually doesn't induce histamine.

Dr. Jill Carnahan 33:14
I want to just say I love that because I am the same way. It is my number one. I so often use that instead of fish oils, even in adults. And it is profound. And it's anti-prostaglandin, so it's kind of anti-mast cell by nature.

Dr. Jill Crista 33:25
Yes. So it calms that part down. So in the 'Tame the Flame' category, I kind of have the general anti-inflammatories and then the mast cell managers. Then, if you need to, obviously, NSAIDs. I'm a huge fan because it can get a kid out of a crisis, like that kid at the farmers market. My get-out-of-jail-free card is feverfew, and I combine it with naproxen or ibuprofen. Just give them two weeks of a pharmaceutical-grade dose of that, and you can really calm things down. It gives you that open window to

start playing with the other things. Rosemary, feverfew—these are beautiful plants for getting the flame down. And then our mast cell managers that we're very familiar with: One of my favorites is nettles because it does both the antihistamine part, it blocks histamine receptors, and it [also] stabilizes the mast cells. And the funniest thing is, I didn't even remember to put it in my book.

Dr. Jill Carnahan 34:24
I know, you look at it later, and you're like, "Oh yes."

Dr. Jill Crista 34:27
I was like, "Okay, well, I've got to get the data about PEA, and I've got to talk about [inaudible] and the stuff that you use every day." I did that in my mold book; I didn't talk about phosphatidylcholine.

Dr. Jill Carnahan 34:40
Oh, it's okay. Next book.

Dr. Jill Crista 34:42
It's all right. Next edition. Yes. And then beat the bugs. I kind of have four categories in there. One category is called the botanical avatars, which are my favorite things to talk about. An avatar is like an ideal. So basically, these are plants that are not only anti-strep, but they [also] hit all the other mechanisms that are going on with the kid, including balancing brain chemistry. So we're finding, in the most recent studies, that these cholinergic interneurons—the communication between the neurons that use acetylcholine to communicate—are getting destroyed in the process. There's something happening there at that neuron.

Dr. Jill Crista 35:24
So if we can find these botanical plants that address strep, reduce neuroinflammation, have some action on the cholinergic interneuron, address the gut, address the kidneys in the urinary tract (that is, this frequency), and reduce pain—because these kids live with a lot of central mediated pain, which means pain that starts in the brain, up-regulating pain—boy, these plants are just beautiful. So things like Chinese skull cap, Oregan grape root, and Bacopa. They all kind of have their separate thing that they do.

Dr. Jill Crista 35:56
In my book, I talk about the personality of the plant. So you can look at the personality of a kid... Like, you talked about really boggy swampy—then we would go for the things that are from a swamp and that love to live there because they're coming with that knowledge and that wisdom. That's the foundation of pretty much every formula I do for a kid. I pick a botanical avatar or two that matches them, and then that's the foundation. Then we add in the other things—the things that reduce inflammation. The other part of 'beat the bugs' is finding things that are anti the bug you think you're dealing with. So if it was mono that started it for a teenager, we would want to make sure to put in things like licorice that would have some activity against that particular virus.

Dr. Jill Crista 36:44
And then pharmaceuticals. I think probably the best tool in my entire book is available to everybody if you want to go to my website. It's a medication compatibility chart because that's what I heard a lot from parents when I was working with them: "I'm scared to do this with the augmentin" or "I'm scared to do this with the serotonin drug." "Can this be done at the same time?" So I just created a chart that shows what is safe. It's all the natural stuff that we do for PANS and PANDAS on the left side—not all of them, but the things I talk about in my book—and then the medications across the top. And you can just go and find, "Is that okay to do?" because I thought, "I'm just going to answer those questions for people." We don't have data on everything.

Dr. Jill Carnahan 37:28
That is so important!

Dr. Jill Crista 37:30
Yes! I just say to parents: "Pay attention to the ones that have a big mark—no." And pretty much everything else, I feel very comfortable as a practitioner combining and have for two decades.

Dr. Jill Carnahan 37:45
So I want to go on to the next two steps. But I just want to mention really quickly that you mentioned cholinergic neurons. There's a study that just came out on post and long COVID symptoms using nicotine. You may know that nicotine is an

acetylcholine receptor. And we know this from old studies on ulcerative colitis. And it was always questioned. People were like, "Why in the world would nicotine work?" Well, it hits acetylcholine receptors. No wonder. Now, I'm not going to recommend it for PANS and PANDAS kids. For most people, you give a lot of nicotine…

Dr. Jill Crista 38:10
I'm using it.

Dr. Jill Carnahan 38:10
But it makes sense, right? And it actually is right in line with what you're saying, [which] is that when they're blocked, affected, inflamed, or infected, those cholinergic [interneurons] are all about our brain and our executive function, and it really is a big deal. So to me, it was like, "No wonder nicotine works in long COVID sometimes," right? You even post about microdosing and being really careful about doses, which I agree with.

Dr. Jill Crista 38:32
Yes. Yes, yes. And I don't shy away from doing this with kids. I prefer to use whole plants, so I'm using tobacco tincture. And we have an amount of how much nicotine per milliliter it is, so we can be really safe. But the key is that cholinergic interneuron, anywhere where acetylcholine can bind—it's nicotinic acetylcholine receptors—it has really high affinity for that. And it's going to bump spike protein off. So you want to make sure that you have something that's going to degrade that spike protein, or you could put the kid into a little bit of a hypercoagulable state. So that's when we're using enzymes, just to make sure that we're breaking down that—

Dr. Jill Carnahan 39:11
Like lumbrokinase, nattokinase, and serrapeptase—all the above. Brilliant!

Dr. Jill Crista 39:14
And if the kid doesn't tolerate those, we will just [say], "Eat the papain and the bromelain yummy little treats. Just get something, or raw pineapple or something." I made that mistake of just like, "Oh, nicotine has high affinity." And then I ended up with patients who were… A kid who has Babesia kind of has purpley thumbnails. And they would come in and they were just purple. I'm like, "Oh my goodness! Vitamin E, enzyme, let's go!"

Dr. Jill Carnahan 39:45
Oh, brilliant, brilliant pearl, as always! So those are the first two steps. Then what are the last two?

Dr. Jill Crista 39:50
Yes. So, regulating immunity. Of course, this is going to be no surprise to you: Gut. We've got to get the gut going. We have to increase vitamin D. One thing we know about mycotoxins is that they downregulate the vitamin D receptor in the kidneys and the intestines. So people need to re-upregulate that, and the way you do that is to flood the body with vitamin D for a period of time. So for about a three-month time, I want them between 60 and 90 nanograms per milliliter of vitamin D-OH so that we can get those receptors upregulated again. It's similar to how we use naltrexone. And naltrexone is also part of that. Peptides are very useful in that category.

Dr. Jill Crista 40:30
And I am in love right now with something new that I've learned about, which is postbiotics. You're probably already on top of this, but I just think it's so brilliant. It's basically just sterilized poop. It's like an FMT, a fecal microbiotic transplant, that you can take orally. And then we're not picking and choosing, "Gee, I wonder what strain, peptide, nucleotide, or bile acid this gut needs." They're getting all of it, and the body can choose what it wants. So I'm seeing really good results from that, but you do have to sprinkle it in at first because people are getting die-off.

Dr. Jill Carnahan 41:08
Interesting. Strong and helpful, right? The last step is...

Dr. Jill Crista 41:13
The last step: Guard the gates. We want to make sure that we're guarding the nasal gate because that is the area of colonization—it kind of circles back to where we started—the dental gate. These kids, because of their fears, get behind on dental cleanings and can end up with a lot of dental stuff. So just simple things like chewing xylitol gum... There was a study. They had the kids choose xylitol gum for five minutes after every meal—I think it was actually even two meals a day—and they showed a dramatic reduction of strep mutants and a dramatic reduction of dental caries. So I'm like, "What kid wouldn't like that prescription?" You know, "Did

you chew your gum?" [laughter] And then the throat—using things like colloidal silver on the throat for sprays or propolis. Those kinds of things have been shown to be really, really beneficial.

Dr. Jill Crista 42:05
And then environmental. The environmental gate is both infections... So use pre-treated clothing. If you're in a tick area, use tick tubes if you have a yard where your kid is playing. Dr. Alexis Chesney just presented that for families that are using this year after year, their tick population is going down to where they're not having any troubles with it. So there are a lot of preventive things that we could be doing that are non-toxic. And then, of course, mold, mold, mold—make sure you're assessing for mold. That's the book in a nutshell.

Dr. Jill Carnahan 42:38
I know! It's amazing! So be sure to grab your copy if you're listening. You'll want to get more because this is so common. And probably, if you're listening, some of you are like, "Oh, I wonder." And you're thinking about your child, or maybe a nephew or niece, or someone in your family or someone that you know, because this is actually way more common. I remember that even in medical school, it was barely talked about. Now it's just like mold, right? These things are actually really common. And because of the increasing toxic load and infectious burden, it's just way, way more common.

Dr. Jill Carnahan 43:12
Personal—you went through this with your kiddos. But what was the biggest lesson or insight? If you could go back to yourself as an early mom, what would you tell yourself as an early mom with all that you've been through and come out with healthy kiddos through this and a book and the knowledge?

Dr. Jill Crista 43:30
I think for me, I knew something wasn't right, but I wasn't getting believed. So it's very similar to the mold thing. And as the behavior started to go up, I was doing this whole circus act to keep everybody normal. And I had a ton of tools. That was one thing I learned, like: "Okay, this problem is that the dopamine receptors are getting destroyed, so these kids are swimming in dopamine. So if I use herbs that are dopaminergic... " My kids had an opposite reaction to those things. Passionflower,

lemon balm, and all these things that we would typically think are going to calm them down would go the other way, and I couldn't understand what was going on.

Dr. Jill Crista 44:09
So anyway, as the behaviors were going on and I was doing the circus act of using all my tools and I had a lot of support, you can start to think of your world—because it does get a little smaller as people don't necessarily feel comfortable around the behaviors—you can start to feel like smaller means less support. So I want people to rewrite that false belief.

Dr. Jill Crista 44:32
You can have a small, hugely supportive environment around you, and you can build what I call the dream team. You get the people around you who understand your kid, don't judge you as a parent, are part of the solution, and don't mind getting a throat culture. Just to say: "Oh, they kind of flared when they were with you. Do you mind if your kid gets a throat culture so we can kind of see?" So some of those things. They get complicated—interpersonal things that happen. But trust yourself. You know your kid better than anyone, and if you have a doctor who is not on board, move immediately because it's going to add trauma to your kid and to you.

Dr. Jill Carnahan 45:12
What brilliant wisdom, because again, whether you're dealing with a child with PANS/PANDAS or yourself with mold, or even Lyme disease, or any of the things that we talk about every day on this podcast and in most of our offices, it is one of the biggest traumas I see—what you just spoke of. In fact, even I have that. My Crohn's doctor was like, "Oh, diet has nothing to do with this," or "Oh, it's all in your head" on the mold. And I actually try to avoid doctors, to be honest.

Dr. Jill Carnahan 45:40
But there is that piece of what you just said. If we leave our listeners with one thing, in your heart as a mother, as a person, or as a patient in your own body, you know your body and system that you were born with more than anyone else. And there's an intuition and innate wisdom that are always giving you feedback. And usually—I would say, nearly 100% of the time—it is right on the money. But we suppress it because our mind's like: "Ooh, that's silly. That's stupid. I'm overreacting." Right?

Dr. Jill Crista 46:06
"I'm going to inconvenience other people."

Dr. Jill Carnahan 46:10
Yes, yes. So I really, really love that you emphasize that, especially in these cases, because the parents want so badly to help their children and they're overwhelmed, exhausted, and even doubting. I remember, and I'm just going to tell you another little story [about] my older brother. When he was very young, he was biting other children. [He was] very young, you know. And looking back, I'm like, "I bet my older brother had some brain inflammation." He's fine now. If he listens to this, which he probably does, he's amazing. He's brilliant. But looking back, just like me with my tonsils, we both had these things going on. I remember that my mom actually went to get some help from a doctor or someone else, and they were like, "You're a poor mother." They literally criticized her motherhood, and she never went back and never got the help.

Dr. Jill Crista 46:55
I got that. I got, "Are you sure you're getting enough sleep to be patient with your kids?" kind of insinuating I'm beating on my children. [laughter] As doctors, we have to be very careful [about] what we project out there and trust our patients. I feel like that's the unique thing about us having enough time with our patients: We can really be present with them, and that's just not available to a lot of doctors. So they get compassion fatigue. They get burned out. And they're not bringing their best to that situation either. So yes, I just feel so grateful for the way that I get to do the work I do. I'm sure you do too.

Dr. Jill Carnahan 47:32
Yes, me too. Me too. So if you're listening, be sure to grab a copy of *A Light in the Dark* by Jill Crista. It's out. When did it come out, Jill?

Dr. Jill Crista 47:40
November. Yes, November last year.

Dr. Jill Carnahan 47:42
Okay, very cool.

Dr. Jill Crista 47:40

It's been out for a while.

Dr. Jill Carnahan 47:45
Yes. And we will link to your courses and, of course, to the book and everything. As always, thank you not only for being here and sharing your wealth of knowledge but also for the compassion you bring. You have such a brilliant way of taking very complex topics and making them simple, bite-sized, and understandable. And I'm sure those listening can say amen to that. So thank you!

Dr. Jill Crista 48:07
Thank you! I put a lot of intention into that. So that means a lot—thank you—especially coming from a master communicator.

Dr. Jill Carnahan 48:13
Aw! Thank you! Thank you, thank you. And we'll be back because Jill squared is not going anywhere, right?

Dr. Jill Crista 48:18
No, that's right.

Dr. Jill Carnahan 48:20
Awesome! Thank you so much for your time today! Bye-bye.