Introduction to MAPS and the Podcast Guest

as we start to treat and the patient will start feel better, their labs can sometimes look worse. So I also don't like to check on me too, too soon because I want to give that window in there.

And it's not a bad thing. It's a good thing, usually. The labs look worst because the immune system is finally coming online and helping because a lot of these tests that we're doing are looking indirectly for the infection.

We're looking at the system. If the new system was tired and not keeping up, it looks more negative. So as we treat, it might look more positive, but that means your antibodies are now joining the fight.

This is a good thing. It's not actually worse. it's actually better, But it is alarming. Hi, welcome to the MAPS webinar series, Healing Tomorrow's Future.

We are thrilled to be bringing you this series packed with valuable information and education within our community. My name is Honey Rinusella and I'm the Executive Director of MAPS, the Medical Academy of Pediatrics and Special Needs.

Within these webinars, we're able to empower clinicians on the knowledge and tools to support patients facing a variety of health challenges. For more information on MAPS or to register for a conference, please visit us at www.medmaps.org.

Thanks for joining us on this journey towards a brighter, healthier future. Welcome back to the MAPS podcast. We're so lucky to have Dr. Casey Kelly joining us today.

She gave a wonderful lecture on the endothelium and how that impacts chronic health at our conference yesterday. And so, Dr Casey, will you please tell us a little bit more about yourself?

Sure. Yeah, I have my own practice in Chicago. I got really interested in integrative care with my health journey. But it's really all I've ever done.

I jumped right into integrative care right after residency. Wow…. I knew I wanted to get into a field that was curious and ask why people were sick.

Yeah. And actually try to to the root cause of what was going on. Got really frustrated with all the med and then a med for the side effect and a then med that side-effect.

Yes. It was too much. So I went on a different path. And through that journey found chronic tick-borne infections, mass cell dysfunction, mold toxicity.

Why Endothelial Health Matters in Chronic Illness

You just find all of these reasons why people are chronically ill. And it's been a really, really cool health journey and professional journey. There I am.

Well, we're so happy that you're here. And so you spoke again on the endothelium, and I'm so curious as to what inspired you to start looking at endophelial health.

Was there anything that were seeing in your practice or in you career that kind of changed the way that looked at

things? Yes, yes, absolutely. It was COVID.

You know, I really, practice shifted. People started to respond differently to treatments. We do a lot of IV therapies in our office that require heparin, and I needed more heprin.

And when I was drawing blood out, it was sticky, in a patient that hadn't previously had any history of hypercoagulability. What is happening here? Why are we having to ratchet all of this up for the population?

And then I kept seeing Lyme and other things awakened, if you will, by the infection and all this inflammation just blooming with it. It just all started to trickle back, and what is happening here?

Why is this like this? And COVID, we know, is a potent disruptor of the endothelium in hyperquietable state and creates that vascular changes. And so then I started digging deeper, how is it related to everything else?

And it's really interesting when you start to pull that thread, how these things really start, these chronic infections can really aggravate the endothelial cells and how that creates systemic infection, inflammation, excuse me.

So maybe we'll back up a little bit. Can you just explain what the Endotheliom is for our listeners? Yeah, absolutely. It's the inner lining of the blood vessels.

So the endothelials, the inner lining of our blood vessels, which then have the muscles and other things around them, right? But it's that inner layer.

And that's the protective coating of your blood vessel. It's meant to be there to help keep everything firm and strong. not inflamed and flowing properly and all of that.

And inside of it is this fluffy, I call it a seaweed layer, called the glycocalyx, which helps, again, keep that extra layer protected in our blood vessels.

It's really interesting what it can do. and how that glycocalyx and the endothelial layer protects us and can keep us healthy, but how it can also play such a big role if it's disrupted in overall systemic inflammation and perpetuates that inflammation if its not working happily.

And I loved the visual you were giving yesterday during your presentation of the seaweed movement of glycocalyx. And it sounds like the endothelium and the glycochalix have a very important function.

But when would you typically be thinking about endophelial health and about the glicochalyx besides chronic illness, right? Because I feel like this is newer that we're starting to think about.

We're trying to dive into it more, which is great. Yes. The symptoms of endothelial dysfunction, they're pretty broad, and they are pretty true for a lot of our chronic patients, but you'll see things like post-exertional fatigue, just fatigue in general, brain fog, muscle weakness.

you can have ear ringing, and it can just these kind of vague symptoms is where it tends to start. You can end up with really hyper-collagible states, blood clots, claudication, those kind things too, atherosclerosis.

It can lead to all of that, but it starts off more subtle. Yes. And I'm sure even more subtle in our children rather than in adults, right?

What the Endothelium and Glycocalyx Do

So what are you seeing in your children that makes you think, oh, I need to look at the endothelium a bit more? Yeah. It's really for me, it's fatigue is one of those starting points.

I started to think about it for everybody because now I know how all of these things affect our endithelial and it is

just a core. Our blood vessels are our pipes.

That's how we get our nutrients. It's how we get our oxygen to all of our cells. And if they're not working, and we can't get out nutrients, we're going to be worn out.

We're gonna be tired. In just a little bit, that's very poor stamina. You do a bit and then it takes three days to recover. That could actually be a blood vessel issue and an endothelial issue, not just the mitochondria issue.

And when you were just talking about it in terms of vector-borne disease, fatigue is one of the symptoms that we actually see with vector borne disease.

And do you think it is the infection itself, or do actually think that it could be because it's impacting our endothelial cells? The answer is yes. You know, these infections are so complicated and complex and so terrifyingly brilliant.

They affect so many different aspects of our body. So the active infection itself is going to play a role. The endothelial destruction will perpetuate it and play the role of the mitochondrial dysfunction, the nutrient depletion, all of it.

which is why it's so hard to really actively treat these patients and why I think an integrative approach is the only way to do it. Because you have to be able to have someone who can look at the entire system as a whole.

You can't just give someone antibiotics and be done. It's never that easy. If only, right? So we have be to juggle all of that, but I don't think we're thinking enough about the blood vessels in the endothelial cell, and it is a place to think about healing and repairing as part of the process.

So we should be thinking about it, but should we also be testing for it? And if so, what would you recommend a clinician ordering or looking at for these patients?

Well, a lot of ligands and things you can test are all research-based only, so we don't really have access to that as clinicians. There are functional mediated dilation testing that you could do in a hospital.

That's not really where we are. So one is a good clinical exam. You could look at capillary refills. I do a lot of sticky blood hypercoagulable markers to help me gauge if there's an issue there.

But I actually think one of the most elegant, cheap, inexpensive ways to test this is urine microalbumin. Interesting. Yeah. Okay. And so what are you looking for in terms of the values or the results there?

If you see an elevation in the microalbumin, which is the albumin that's… You'll see albumen on a regular UA. This is micro albumins, so even less than that.

If your seeing that, it means that the glycocalyx and the endothelial layer in kidneys is disrupted. It's allowing now proteins to filter through, what you're going to get excreted in your urine.

Symptoms of Endothelial Dysfunction in Kids

That means, that layer is And if that layer is disrupted in the kidneys, it's probably disrupted everywhere. So it is a really nice, inexpensive, cheap, and easy way on kids, much easier than getting a blood test, to look and see just really quickly, is there a big issue that we need to deal with?

you can also then track easily as well with treatment. I always tell people like we're not treating a piece of paper, we are treating the child, right?

But it is sometimes nice as you go through treatment to just see if there are markers showing improvement, especially with things that we can't really see with our eyes, which are our blood vessels, and so what are if You know, you're suspecting this, the child is having symptoms, maybe some of the blood tests or the urine tests are

coming back.

What are things you are thinking about to strengthen and support the endothelium? Yeah. It's tricky with kids because a lot of things are pills and that's hard to get.

And so I would start with food and try to those foods in there that are going to support that glycocalyx and nitric oxide production. So think of The Rainbow, but especially things like beets.

I love beets. I know you said you don't like beats. No, I like it. Beats, it's a dirty flavor and a lot of kids won't eat beads. If I can get them to eat, bead's great, but there are beaded powders and things like that.

That's an easy sneak to get it in into their smoothies and make a popsicle with it, those kind of things. Right, so beades are great. All the sulfur-heavy foods too, broccoli, cauliflower, carol, those are also really good for the glycocalyx and healing and repairing that.

So fruits and veggies, right? All of that stuff. Nuts and seeds and the good stuff, all of it. That's where we start. A lot of our patients are already doing a lot that good work to the best of their abilities because kids are tricky with their specifics and what they will eat and they won't.

If you're really worried about it though, there are some supplements out there that are food based and have seaweed extracts in it that help to repair the glycocalyx that you can open.

You can put it into the beets powder, the smoothie, it's just food. These are just foods based capsules and supplements and they're easy. Kids tend to tolerate them pretty well and you could hide it.

in their applesauce. So you mentioned seaweed as a food to help like okaylix which looks like seaweed and I find it so interesting that sometimes nature gives us clues on what it can help to support right and so you know you think about like walnuts for instance they look like a brain.

but they are very good for brain health, right?

Testing for Endothelial Dysfunction

And so I guess it's similar. I can add seaweed to that list now of this is going to help the glycocalyx and our endothelial cells. Yeah, there's very specific seaweeds.

There's a brown seaweed and a green seaweed, but it is very, it a very nice metaphor to use because it goes back to it. Oh my gosh, the things that are going heal are glycochalic, so seaweed.

It's wild, yeah, silly cool. Some of it yes and some of the parents that might be listening or that are coming into you know Our practices they really like to have like concrete information like how much do I need to feed my like?

How many beats do? I? Need to Feed my child and I'm sure it it matters how big they are that you Know how severe their symptoms are but do you have a general guideline in regards to you?

Know the amount or the serving size that they should be I don't really it's more about trying to get it in them. Yeah It's not even that you need to have it every single day.

The powders are easy. Those are usually a scoop. If you can get that in every day, awesome. But if you give them a beat a couple times a week, all the better.

I don't have a specifically set out that way. Oh, I think that probably makes it less, you know, less pressure on the parents. So that's great. But just incorporating and I always try to focus on what can we add into the child's diet rather than taking things out.

I love when therapies include adding more in for them. And then what about if you had an adult that had endothelial dysfunction? Is there anything besides diet that you might be looking at or thinking about?

So the same supplements that we use with the seaweed, we can use in adults as well. Also anything that's going to support nitric oxide. So there are supplements and help with that too that have arginine and citrulline in them to help support that and boost that up.

Good old fashioned fish oil is going be very helpful. Making sure our minerals are replete. All of that is gonna be important. It's interesting because the glycocalyx also has hyaluronic acid and gluposamine, which we think about for joints, but it's also in our blood vessels in there.

So joint support can help our vessels. Even some good joint-support supplements can also help blood vessel. I was a little surprised on the dosing that you had up there on PowerPoint for arginine.

I think we might be under-dosing it, actually, when we're putting it in. We use it a lot for endothelial support, as you said, for Bartonella. After seeing your presentation, I'm like, I might underdose that. Yeah, and I think it was 24 grams for an adult per day, which is a pretty high level of it.

And we use it for babesia too, to depletes this as well.

Dietary and Supplement Support for the Endothelium

Do you have to be mindful of lysine balance with arginine? So there's that play in there too. But yeah, it's possible that we are all under-dosing these things, especially in the light of this post-COVID world and where we and how our blood vessels and our endothelium are so destructive.

Absolutely. because I've used higher doses but more for like wounds healing actually but I hadn't pushed up to the 24 grams it was mainly like 14 grams and seeing great results even with that so that's wonderful so thank you for sharing that and you know when When are you thinking about, like even backing up even further, when should a parent be worried about their child maybe having an underlying infection or thinking vector-borne disease, which I know is your specialty?

Because I feel like we're often told that it's behavioral or a child has a mental health condition. It's just anxiety. So when would you encourage parents to start digging deeper for vector borne disease or chronic infections?

I think parents have an inherent spidey sense and I earlier than they even maybe are willing to admit. And sometimes it's easy to just say, there's something going on and the doc said it was anxiety.

Okay, that's what it is. That might be easier. But I think a lot of parents just have that thought already inside that this is something different. It doesn't feel right.

it doesn' feel like it just anxiety and certainly if you go down that route, the conventional route or trying to treat everything conventionally and it not helping, That's when it a really great time to re-examine.

Absolutely. What else could be going in here? you know, what am I missing for my child? And that's, yeah. So anytime you have any of those, like that feeling that there's something more, there might be, and you should follow up on that.

But that is where the integrative type of physicians and providers are going to be the people that you really need to seek out to get that second opinion.

And what do you say to parents who say they've never found a tick on their child. Yeah, most adults haven't either. They're so tiny. The larvae and the babies are so small, you're not gonna see them.

There's a size of a period on a piece of paper and we don't feel them, so it's really easy to miss a tick. Yes, and it

doesn't have to be attached to you for three days in order to transmit it.

We don' know exactly, but it can happen a lot faster than that. And you don''t feel it, it could crawl up in your hair, You don's see it it''s really, really easier to mist these.

So I'll ask about exposure risk, even golfers. It's like you don't have to be a camper, but do you go outside? Do you have pets? Your pets ever get ticks?

That's another clue that you haven't been exposed to them as well. Right. So yeah, I think I didn't see a tick. I never saw a take. Most people, most people don't.

You know, I always say in practice I'm more concerned about the ticks I don' find than the tics you do find because if you found a tick on your child you likely might have taken it off onto the pediatrician, maybe got prophylactic antibiotics or tested it.

But I also think it's really important that we now are calling it vector-borne disease, right? Not tick-born disease. And maybe you can explain a little bit more of why we've transitioned the terminology to vector born disease for our kids.

So Vector really means any kind of biting insect. And there are several infections, Bartonella, for example, that actually get transmitted much more, probably we know of, on other things like lice, For example.

So other biting insects transmit a lot of infections. We're trying to not limit it just to ticks and just specific ticks. It's just any kinds of binding insect, mosquitoes, etc.

That will play a role in developing these chronic diseases and in your practice, you know when we hear about ticks We think a lot about Lyme disease and we think about that bulls-eye rash, but Do you do you see Lyne disease a what or do?

You see some of the other Co infections more so in our children, especially the ones that might have other neurodevelopmental disorders like autism or pans and pandas Yeah, yeah I think the big three are Lyme, BART, and Babesia.

Vector-Borne Disease, Symptoms, and Expectations

Those are the three that we see and they're hard to treat. These are not simple, take out two weeks of antibiotics and you're done type of thing. these are deeply embedded, conic, stealth, wickedly smart infections and safe a while.

They're manageable. We can put these into remission. You can treat this. It's just not an easy road. But yeah, especially, Bart is really bad with anger outbursts.

I call it fulking out. That little kid, it just hulks out, and then they don't even remember why or what happened. Babesia is a little more like the anxiety, deja vu, depersonalization type of symptoms.

Lyme can kind of cover the gambit, so we always look for that, too, in the different things that happen there. Yeah, we see a lot of it, but we're looking for it.

And these are major culprits for those symptoms for these kids. I always say these stubborn germs, that it takes a long time. They love their life and their child's body and they want to stay there.

But how do you set expectations for parents in terms of lengths of treatment? Yeah. It's a marathon. Not a sprint. This is not an easy road. There's going to be ups and downs, and then feel worse before you feel better.

And we do have to set those expectations because they're not easy. The terrain matters, the child's environment

matters and their genetics matter. I have families that have six kids and they are all presenting differently.

And so God love the mom who can keep it all straight in there. But everyone is so uniquely affected by these infections. It makes it tricky and to balance it.

All but it is from the get go. This doesn't take a while. Six months, 12 months. Two years, it's going to be a bit. You're going feel better along the way.

So it not two years of continued misery and then all of a sudden you feel But it's that bumpy road there. And I want to know when you plateau, and I wanna know if it downslides and stays down slid, you know, those are when we need to start to change and adjust and re-evaluate what our next steps are.

Yeah, I think that's so helpful to kind of set those expectations for parents and also to now like, they are gonna feel better. It's not always gonna be like this, for that period of time.

But when do you look at like retesting, to see when these infections clear? It's a good question. We'll test it. And we check different lab markers and things, microalbumin or other things along the way.

Every three to six months or so, we're kind of checking in on stuff. What can happen, too, sometimes is as we start to treat and the patient will start feel better, their labs can sometimes look worse.

So I also don't like to check on me too too soon because I want to give that that. window in there, and it's not a bad thing. It's a good thing usually.

The labs look worse because the immune system is finally coming online and helping, because a lot of these tests that we're doing are looking indirectly for the infection.

We're looking at the system. If the new system was tired and not keeping up, it looks more negative. So as we treat it might look more positive, but that means your antibodies are now joining the fight.

This is a Good thing, It is not actually worse. But it's alarming to patients that are like, we've done all of this, why are my labs worse, right? So it was all in context and it is all that big picture and you have to look at it all, where you are in the treatment, how you're feeling, and in there.

But I do like to keep tabs on things overall just so I have a good arch of where we are and then what different things we need to target. Absolutely. I agree 100% with that.

And what we're seeing is a lot of our kids have immune dysregulation, that they're not mounting the antibodies and the titers that we would anticipate that the should.

So that's why I say it over and over again, it's like treating the child and not the piece of paper, right?

Retesting, Treatment Plateaus, and Small Wins

Because if they are presenting with the history and with symptoms of a certain vector-borne disease, perhaps initiating treatment, regardless of what's coming up, because it could be that their body is just not healthy enough, right, to mount that antibody response.

And I was curious, since you started to look at the endothelium and address the Endothelin and put in dietary support for that, are you seeing quicker improvements in symptoms for your patients with vector-borne disease or any changes that you're noticing?

I think it still takes forever, so that's hard to judge because, you know, nine months for eight and a half months, right? But I feel people are feeling better quicker.

Their stamina is improved. They're getting their nutrients and oxygen to their tissues better. So everything does kind of get enhanced in a good way. You start to feel better sooner and kind-of judge through that.

It's still a long road. And just that little wind sometimes too, like I can now take a shower without having to take nap afterwards is a huge victory.

So those little winds keep us going and help us move it forward. And being able to walk up the stairs without being completely out of breath or being to add in a little bit of exercise and not helping with the mental health, it is those winds.

paying attention to those little wins because they all add up to very big wins. And so I think that's a great point that you make there. So do you have any advice for any parent that might be listening to this episode who might thinking that their child has vector-borne disease or are being treated for vector borne disease, but they're kind of like plateauing and how to have that conversation about endothelial health with their provider?

Yeah, oh my gosh. Well, if they think that their child has a vector-borne illness and they haven't gotten treatment yet or don't have a provider who's willing to listen to them, I would say seek out a MAPS or an ILADS provider first and foremost.

Get out there, get it to the someone who is going to to you and help you through that journey and test and see if it's there or not and then work through it with you.

If you're plateauing, it is always a good place to look. Are your blood vessels perpetuating this, and that's why we're stuck and we are not able to really heal.

So we could do a microalbumin. You could just talk to your physician, say, hey, I heard about the endothelial cells. I know it sounds crazy. Can I check my kidneys to see if that is an area?

You also, fresh, you could start eating these foods.

Finding Support and Learning More

Start adding these food right away. Don't even have to wait. Just kind of assume, if my kids got tick-borne infections, they probably have some baseline endithelium dysfunction.

Maybe I should add some beets. So that's a pretty simple thing that you don't need to talk to anybody. You can just advocate and start to add extra new fun foods to your kid's diet, see what happens.

Yeah. Wonderful. Thank you so much for sharing your knowledge with all of us. And so if people want to find you, learn more about you work with you. How can they find?

Yeah, we're online, caseintegrativehealth.com. You can find us on Instagram, Facebook. I also have healwithcase.com, which is a website where I've created some online training tools for patients.

We can learn about basics right now in our Groundwork for Healing course. And I have a line course that's coming up too, so stay tuned. Wonderful. Well, thank you so much for joining me.

Thank you. Thanks so much for joining us today. I'm Honey Rinusella, and this is MAPS. As we heal tomorrow's future, we appreciate you joining on the journey.

We'll see you next time.