Autoimmune Therapies - Low Dose Naltrexone Transcript

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Introduction to Doctor Kelly and the Doctor Talks series

Hi, I'm doctor Kelly Halderman. I'm a former medical physician and author of The Thyroid Debacle. I'm now devoting my life to education, research and biotech because I realize we need educated people to bring us cutting edge information, especially when we find ourselves with a diagnosis such as hypothyroidism.

When I was practicing allopathic medicine, I myself became very sick, bedridden with what would be diagnosed as Lyme and mold infections. Along my health journey, I was also diagnosed with Hashimoto's thyroiditis, a condition I was told that could only be managed with medication.

Well, I'm here to tell you that there is more than medication to help you, as you will learn through my powerful interviews with several functional medicine practitioners.

There are tools that will help empower you to take charge of your health. Join me today as I interview leading doctors, naturopathic specialists to uncover the most useful health insights for you.

This podcast has been launched in collaboration with Doctor Talks. Visit them today at Doctor talks.com. Backslash Calendar to learn more about their upcoming summits.

Hi everyone. This is Doctor Kelly. Welcome back to Doctor Talks and we have a very special guest. I've been waiting a long time to talk to our guest. Her name is Doctor Jill Carnahan.

Welcome, doctor Jill. Thank you doctor Kelly. So excited to be here with you today. Yes. And I don't even know where to start on, you know, your your background and how much you've given back.

But I do right away want to, show the audience the book that you wrote. And we're going to talk a little bit about this. The topic today is going to be mostly on low dose naltrexone, LDN and but really this book for anyone with chronic illness, you have loved ones with chronic illness, not just thyroid health at all.

You know, Doctor Jill went through chronic illness just like myself, the mold and all the infectious infections. And so we not only understand the process because we're both medical doctors, but we have been the we have been the patient, we have been in there.

So this book, Unexpected Finding Resilience Through Functional Medicine, science and Faith is absolutely beautiful.

Doctor Jill Carnahan's chronic illness journey

So please tell us about yourself, doctor. Jill, sir, thank you for having me. So I practice functional medicine in Boulder, Colorado, but I grew up on a farm in Illinois, and, one of five kids and had my own journey through medical school with breast cancer and then shortly after Crohn's disease.

So I really very quickly had the School of Life education on how to deal with chronic, complex illness that was life threatening. And I always say I learned so much through that, probably more than any textbook in medicine.

And again, like we both share those journeys, but I come as granted I have a medical education, but my real heart is empowering patients to heal themselves and to trust their bodies innate wisdom that it wants to heal if we give it the right inputs.

Absolutely. And I really do believe that I, you know, we could go into pejorative about, clinical medicine, allopathic medicine, rather, but to just kind of sum it up, it's I felt that a lot of the empower ment and the healing was taken

away from the patient and in their control, and a lot of it is under our control.

And, and I like this, this approach and giving power back to the patient education that their body you know they're really they know their body best and that we can do a better job partnering with them.

And a lot of, the stories that you have in your book, too, are really touching. And how you do that. I think the first question, because we're going to be talking about LDN models now, traction is to describe what is this drug.

Yeah, yeah. So naltrexone has been available for decades and naltrexone is an opioid blocker. So years and years ago it was used for heroin addicts and opioid addicts because it was like, any of the like disulfiram for alcoholics.

It blocks the receptors from feeling that effect of opioids. And so what it would do in an addict is they couldn't get high. And so they would avoid, you know, using that drug.

But what happened in the 1980s, a very wise doctor started trying, I don't know why he first originally thought of trying it, but he used it in some HIV patients, and he started to see some remarkable changes in their immune system.

He thought, what my world is going on, and we now know that low dose naltrexone. So the typical, prescription dose is 50mg or more. And low dose usually is anywhere from 1 to 4.5 milligrams or somewhere in that very low, like a 10th of the regular dose.

And what we know is it blocks are natural opioid receptors because we all produce endogenous opioids. It makes us like the runner's high that you might feel or that joy you might feel when you see, you know, you had a friends wedding or you see your child graduating from a high school.

This real joy that we have, we have the ability to make endorphins. And it's one of those things that and can also get us into flow states. I, my super big fan of flow.

So if you're a surfer or a skier or you're a musician, you can get to that state where it's timeless, it's effortless. That's part of that is endorphins.

So we want to produce endorphins in our body. And what low dose naltrexone does is it blocks your own, production, usually 2 to 4. Am is that prime time?

And then your body gets a signal. Wait, there's not enough opiates here, and it actually causes your body to produce more endorphins and opioids. And so that naturally helps you feel better, less pain.

It's like a natural pain relief. But even more than that is what they found is this endorphin cascade also down regulates cytokines, which are inflammatory molecules that cause pain and inflammation, autoimmunity.

What low-dose naltrexone is and how it works

So we're now using this in low doses to stimulate your own body to produce endorphins. And it can be used for autoimmunity. It can be used for cancer.

It can be used for Crohn's and colitis, ovarian cancer and many, many issues that patients find low endorphin cases or increased cytokines. Okay. Great.

Yeah, I think that, it's been a life, a game changer, a lifesaver for me personally. I started using it about I think it's about four years ago now, and even the doctor who prescribed it was a friend.

And he's like, I don't know, Kelly. Like, I, you know, I'm not quite sure. But by that point we had really, gone after root causes. I think that's important to really go after those cellular stresses and not continue to have a bad diet, bad lifestyle.

The epigenetic stress, and then think that this is a cure all. I think that's important for people to understand that this is part of the work that we're doing.

And trying to get the person well, and this can just be real, you know, jumpstart or can be that point where you add it in at appropriate times. Can you talk about that?

Can you talk about the cadence of when you, you know, someone's ready or can you just start it right away and start working on, foundational health? Yeah.

So I do typically do. So basically like say we're dealing with thyroid or autoimmunity or any of these things that are in the realm that it could be helpful.

You first want to do diet and make sure that the diet is clean, ready and processed diet. Many people without immunity do better off gluten and off some of the common allergens.

So sometimes I'll do like a paleo grain free diet or at least a gluten free diet. Often dairy and sugar are components of inflammation as well. So there's all kinds of ways to kind of do that.

But diets huge. And then so with autoimmunity we have genetic inputs. We can't change that. But with environmental insults. So decreasing exposure to toxic chemicals, improving your diet.

So and clean air, clean water, clean foods, some of these clean inputs and then the gut immune interface. So how you would look at that is you'd want to look at is there permeability which there almost always is in our immunity.

Do you need to change the diet. Do you need to heal the gut. You need to, get rid of dysbiosis in the gut. So we're dealing with the gut immune interface.

We're dealing with environmental insults. We can't really change genetics, but those are foundational for healing from autoimmunity. And then the bonus, it can be really powerful.

But LDN by itself will probably not reverse all the inflammation. Right. Exactly. And that's that's just important for people to, to keep in mind, it's not a one trick pony, but it really does it.

Like Doctor Jill said, it's it's acting at that molecular level. And so, I follow Doctor Paul Anderson and he recently tweeted, that it's a glial modulator, and that it's binding to the toll receptors.

Can you kind of go into when it's binding to that toll like receptor, the downstream effects. Again, cytokines. But anything specifically. Yeah. So they can it does bind.

And so typically we give this a bad time. The downside is opioids make you sleepy happy tired. And so if you block the opioids at bedtime and you already have a sleep disorder or severe insomnia, it can make that worse.

And usually it's temporary. So what I'll typically do is prescribe like a 3.0mg and give people a half to 1.5, work up to three, work up to 4.5, which is kind of the dose that's been mostly studied, although again, you can have anywhere from 1 to 5mg and still be effective, all in that low range.

But if someone has trouble sleeping, they can try the low dose or they can take it earlier in the day. But the reason we do that by time is because our natural endorphin production 2 to 4 a.m. is kind of the height.

So we're trying to catch that natural, endorphin cycle and block it. But what it does is it, it binds to receptor sites on the opioids. It binds to toll like receptors, which like receptors are like the gatekeepers of inflammation in the immune system.

I can do a whole lecture on that. It gets really complicated. But for the layperson, what they are is they're just kind of like on off switch is like at a train station, you get the train tracks going, the train goes through this track and you

open the gate till like receptors are the gateways into different immune cytokines and inflammation.

So if those are on and causing inflammatory status, you can actually block those or change those expression. And again those are kind of gateways into a bunch of cytokine production cytokines.

We all kind of learned in Covid. But in the pandemic basically those are inflammatory molecules that are supposed to help you fight infections and do good things, but usually with mold related illness, with autoimmunity and with pandemic issues, a lot of times the cytokines get turned on and then they are in excess and they create tissue damage and inflammation and auto immunity and all kinds of bad things.

If they're too excessive, this would be like TNF alpha. And I'll two and I'll six and all these ones we know. And in fact, a lot of the big blockbuster drugs are specific blockers of a certain cytokine.

So all that to say we can actually down regulate that production in general with LDA and it upregulate endorphin. So even though it's blocking our own endorphin production temporarily, it actually increases in the long term endorphin production, which is our feelgood chemical.

It's the runner's high. It's what we all want to feel naturally. I always joke I must naturally have pretty good endorphin production because I've never really done drugs, and I don't see the point because, like, just life. Just like people.

Just like loving what I do that gets me high in natural. And that's like our natural endorphin production. And we can actually whole nother topic.

Using LDN alongside foundational healing

But like by, creating flow in our life. That's one way to increase endorphins naturally. So is LDA. And, this inhibits certain immune cells. So certain, cytokines and immune cells that are like macrophages that are overreactive and cause tissue damage.

This can kind of dampen their response. And in general, what we see is better mood, decrease inflammation, decrease pain and decrease risk of autoimmunity.

Do you have any favorite ways to increase flow? Oh I do I love flow. And so basically what you want to do with flow is do something a little bit novel, a little bit new, something you love to do.

And for me, like I ride my motorcycle, I climb rocks, I love to ski, but I also love to just be in nature. Like just be in nature. Maybe with some music or without any headphones at all.

Or reading. I love to write and create. I love to color. So these are all things for me. I see a lot of musicians. I'm not very musically inclined, but musicians can get into flow when they're just all of a sudden four hours later, they've been playing their guitar or jazz musicians.

And so it doesn't have to be a sport. If you're not very athletic, you can do it in other ways. But this actually was discovered first with like pro athletes when they would do these huge waves and things.

And what happens in flow states is it's that you lose your sense of time, you lose your sense of where you're at, and you have this sense of oneness with the environment or whatever you're doing.

You usually have a lot of joy and excitement, and usually a lot of creativity. So whether you're writing or surfing or any of these things and you bypass your logical, like, say you're a surfer and you're surfing these big waves, you're not thinking, oh, I have to do this next, your body just automatically goes into doing exactly the things that you need to do.

And it's almost like this, intuitive, sense of movement and intuitive sense of, you know, whatever you're doing. And

it's it's a powerful place. I love to be there.

You can also have social flow, which is like when you have a group of people doing something in common. And I feel like I have this with my patients in the office because I'm just, like, totally present with them listening to their story, you know, asking them questions.

I'm sure you understand that, too. To me, that's also flow, because I lose most of the time. I'm just totally with them and present. Is that synonymous with the alpha state brainwave state?

So what they say about flow, is you are the state of optimal like dopamine, norepinephrine, anandamide and opioids. So it's like optimal neurotransmitters.

And I suppose you could also be that way in other things. I think it very much crosses over into other avenues. I know there was some studies on fighter pilots and they were studying when they get into the zone and they have to be completely, absolutely in the present moment, all their lives are on the line.

And that just kind of like surfing and some other things in rock climbing. But they noticed that their brains are in that alpha wave type state. But, I really love the brain tap for that to.

Yes, it just think that's an amazing tool. I use that early on and it really helped me calm down and, underneath understand even what it was like to be in that flow, say, because my body forgot I was in this very high, sympathetic going, going, going, you know, type A personality, actually.

Now, Doctor Jill taught me that we both share that we are type C personality and we'll get into that. But, I was able to really, teach my body, kind of reteach my body.

And that's very important in healing that we do take the time if we work, especially when we're sympathetically driven like that flight or fight state that healing is in that parasympathetic.

So getting into that that state and again, you don't have to go to Himalayas and and meditate. You can do something fun and you can do it with people.

Some people like you said, you can get into a a flow state with people that. Absolutely. I mean, with this pandemic, we now know critically how important it is to have that community.

And so if you can get that to, for one, I guess, of getting in the flow and being with people, that's a winner. So I did mention the type C personality.

Will you go into that for us? Because I would bet Doctor Jill, some of the people listening might be that type C personality. Yeah. So we have the type of like driven and all this stuff.

And the type B is more like chill or relax. But this type C is like really? Not not good at asking for help. Not good at really, owning, you know, what they need.

And you tend to be a people pleaser.

Flow states, brainwaves, and the type C personality

And there's been studies that show that this is actually sensitive with cancers like breast cancer and melanoma and other things. And I realized as I started to read about this, oh, gosh, that was part of my history, because I got cancer at 25 and especially government actually talks about breast cancer specifically because it's this nurturing organ, right?

How we bring life into the world and nurture a baby. And this metaphorical, piece of breast cancer is we're nurturing everybody else but ourselves. And I know you and I talked briefly before, the medical education is brutal, and it

helped us get to where we are.

And there's wonderful things about it, but it's still very driven, masculine, achievement oriented. And really, I mean, we're taught in surgery and some of these things like suppress your need for water or using the restroom or sleeping.

Right, like you're taught to suppress your body's need for normal physiological things and get on with it and show up and don't complain. And I'm sure, like you, for me, in medical school, you did not, you went to work and you did not not show up unless you were in the ICU or dead like there was no room for being sick.

Right. And so we have to kind of unlearn that because that's not being kind ourselves. And if we want to practice and model behavior for our patients, it starts healing starts with listening to our body and taking care of ourselves and being kind in that emotional, intuitive, sweet kind of part of our self that's much more feminine nature.

We all have mask in the feminine. So this is not male or female, it's it's parts of ourselves. But nurturing that more, creative and soft. And in to live sense is actually so powerful in helping people heal.

And it's just as important as the analytical mind. Absolutely. And you do talk about that in your book. You talk about the intuition. And I know that was beat out of me.

It's not being valid. You know, when you actually felt, you know, when you connected with your patient and you had intuition. And Neil Nathan does a great job of explaining intuitive healing.

So so do you. But I remember it was just like you were taught to be a robot in you were taught to, again, you know, by by going through the training and like you said, there's no room for your needs, Jillian.

There's no there's no room. You need to do this. And we wonder why the physician suicide rates are so high. They are staggeringly high. They have nowhere to go. They have no one to turn to.

And they're the ones who are supposed to be on the frontlines. And so I really love what you're doing. I think physicians of all kinds should, should read your book.

I told you I was making my husband read your book because he's an anesthesiologist for the mayo. And they just go, go, go. And it just it's very hard on, on a person.

And again, it's really sad. The state of medicine right now and how doctors are treated, especially when you are an intuitive person, an HSP. Now, I know you and I share that as well.

And so it was more an even more ego dis tonic to me to go through that training and lose that part of myself. I really do think that led to my demise of my, you know, part of, why I was diagnosed with chronic illness and a part of why I was able to heal is addressing everything.

You know, really looking at the whole ism of what was going on in my body, in my spirit. And again, your book details beautifully your your healing journey.

I'd like to ask you, because I listened to you on the better Health guy Scott, for is going to a great friend of of both of ours. And you talked about daily methods of detoxification.

I think that is genius. When we think about detox, we we think, oh, we're going to do a detox for 30 days and, and, and the people who are being marketed to are not healthy enough to do what you also said in a different podcast, dilution is a solution for pollution.

And that's why you're you're you may be gaining weight and not be able to get off. So get the pounds off. And so the last thing you want to do is stress your body out when you're not metabolically ready.

So dive into that doctor Jill. You got it I love it. And thank you for bringing that up. So first of all daily detox. So like you said so often on, you know, you're on your social media or this and there's like oh, do this shake for 30 days or do this protocol for 30 days.

And it's like, it sounds too good to be true, right? It is because our bodies don't work on it. January 1st comes and we do 20 detox once a year, and then the rest of the year we eat crap and we, you know, don't take care of ourselves. We're not sleeping. We're just strategy.

Not again. No no no no. But what I want to do is make it very doable because otherwise it gets overwhelming. Right? So but what you want to do is pick things that fit into your life that you can do as habits.

You want to create, habits that are healthy. And I always say start very simple, clean air, clean water, clean food because all of us have access to that.

We don't need a, you know, expensive doctor or expensive protocol or expensive supplements. Clean air is the air that we breathe. 80% of the environmental toxic load comes from the air that we breathe.

So you want to make sure, at least in your bedroom, you have a good air filtration system or, you know, standalone filter with both Hepa filtration, which is a particulate, and a VOC volatile organic compound filter.

Usually that's like a clay or charcoal or zeolite in the filter to filter out formaldehyde and fumes and smoke and mold, mycotoxins, etc. those are those 2.5 microns and less particulate that are like the size of viruses, but can be really critical to your health.

So clean air, clean water, drinking clean water not out of plastic water bottles either reverse osmosis or filtered water. You can use a fridge. You don't need to do it.

Daily detox habits and reducing toxic burden

Use a fridge filter like a standalone. I'm not a big fan of normal fridge filters. I don't think they do a great job. So I have a picture in my fridge, or I have a standalone on the counter.

Or you can use reverse osmosis. But all of these things are critical nowadays because our water supplies are becoming more and more contaminated. I just found out last year in Colorado all of the water tested, all the water supplies tested.

Every one of them was contaminated with PFOA, which is like Teflon, Gore-Tex. These are forever chemicals. And when they can't even calculate the half life, they're in our water supply now forever.

So you need to be drinking filter water or spring water or some clean source of water and then clean food. And these basic inputs are so critical. And then you said the daily habit.

So I happen to do an absence of bath every night. That's one option. You can do dry brushing before your shower. You could do a, castor oil pack once a week on your liver gallbladder.

You could do a coffee enema, which can be sounds crazy, especially for those of us in telepathic medicine. But what it does is it triggers the liver and gallbladder to release bile and kind of help your detox pathways through that bile acid release.

You can take binders several times per week or every day that be clay or charcoal. You can take a little found or precursor of glutathione. And like I said, clean air, clean water, clean food can be your foundation.

And just making those healthy choices to eat clean and to drink clean water and to breathe clean air is half the battle. If your inputs are clean, you're going to have outputs that are clean.

And you mentioned something to superimpose. And if you're having trouble losing weight, I hear more and more people. They're doing the right thing. They're eating the right food. They're exercising.

It's not about calories in and calories out. It's about inflammation. And if your body's inflamed and you're toxic, as you mentioned, because dilution is the solution to pollution.

So whether it's our air quality, we open up windows, dilute any toxic things in our air, in our home, or whether our bodies are trying to protect us. And here's where you can be kind yourself because you're like, why am I gaining weight?

I hate my belly. I hate my thighs. I'm so frustrated. And we have this like, we don't like ourselves, right? But part of the healing is being kind ourself and loving ourself just where we are, who we are, but then also giving the resources to our body to get rid of that extra fat, which is just a delusional effect for toxicity.

So if you're toxic and you try to lose weight, you won't do so well because that toxicity wants to hold on to the extra fat because it protects it by diluting it.

So you really want to think about basic detox first, and especially if you've been exposed to mold, that's a big one that can trigger weight gain. And then as you get detox, you'll be able to lose weight a lot easier.

If that's your goal. Do you ever use in your practice the weeks of visual contrast test? I do so because as you can do online, we actually do it in person, in our office and what it does is it checks retinal visual acuity for lines like darken white lines.

So it's contrast. And what it does is it checks basically it's a way to check blood flow to some of the smallest vessels in your body, which is the blood flow to your retina.

And often a toxic chemical like mold or mycotoxins, will affect the vascular system. And this is one where we can actually test to see if that vascular system is compromised to the retina.

And our contrast is off. And I've seen it literally be completely a fail. And then someone does detox and binders and things and they they pass. So I know it really, really works.

And that's one of the ways I did eye test to see if people still need binders and detox and where they're out in the path. And one of the big things obviously mold, mycotoxins affects affects this.

But this was studied in, World War two for armed forces if they were exposed to biotech signs and chemical related warfare. So it really applies to any chemical toxic exposure.

Yeah, I think that's a great cheap test because, unfortunately, unfortunately we have a lot of expensive ones. So I think that that test is is pretty cheap.

And I believe it's just VIX test scam. Or you can find it on surviving mold and all know that it's there. So I just wanted to get your take on that and then to, to really wrap it up, you, you talk about reversible autoimmunity and I, I want to say that this is one of the messages that I wanted to, to have come across very clearly with this, this, topic of Doctor Talks thyroid series is that auto immunity is not a death sentence.

And that what you just said, Doctor Jill, about loving your body, you're even if your body's keeping on weight, it's trying to protect you. Your body is innately and divinely designed, and that we have to kind of take a step back and not look at ourselves as broken, but look at that so danger response in that we have cellular stress in the body is acting appropriately.

And so that brings me to that reversible aspect of autoimmunity. When I was diagnosed with Hashimoto's, I was given a prescription for synthroid and told to come back and get my lab strong.

And that was it. And I knew there had to be a root cause. And so talk to us about when you think of reversible autoimmunity. I mean, when it comes to thyroid and more, what comes to mind.

Yes. And my personal experience was after chemo and radiation, I was really sick. And six months after I got through cancer treatment, I was diagnosed with Crohn's disease.

Reversible autoimmunity and healing hope

Crohn's disease again, autoimmune disease where the body attacks a gut lining. And I was quite sick. And I remember seeing my gastroenterologist and he said, this is lifelong.

You're going to need steroids. You're going to need immune modulating drugs. You're probably going to have your colon removed over your lifetime. And it was depressing.

There was no hope. And then right after I left, ask one question and it was just diet have anything to do with this? And he did not pause. He said, Jill, diet has nothing to do with this, but that in the late I know, right?

Like really. But this was 20 years ago. It didn't matter. I mean, the literature now supports the diet does have something to do with Crohn's colitis.

An autoimmune in general. But at that moment, all I had was my intuition. And my intuition said, this can't be right. This is the gut. Like, how can it not have any good food?

So I went on a, you know, a research, and I found a, specific carbohydrate diet, which at that time was some of the best evidence and really helped me to start to reverse the Crohn's.

And now I'm completely cured. I do not have Crohn's anymore. Right. So what I learned in that process, though, was there are ways to look at, just like I said, that try it of genetics, environmental insults, and the gut immune interface.

And if you look at that and you start to reverse things that triggered or came before the diagnosis and you actually deal with those kinds of triggers, you can absolutely reverse autoimmune.

I've seen it myself and I've seen it in hundreds of patients. And then now it takes time. It takes effort and not all what our immunity is going to be reverse.

That's the truth. But the truth is it's possible. And to have that possibility is powerful medicine. Right. And the goal may not be, again, to reverse the autoimmunity, because then people could get really discouraged.

But the goal is to get on the path to healing and keep going. Keep going. Every step that you take is in your favor, and it's going to help your your health span and your life span.

And and you know, as women, we we are caretakers. We just in the society we are. And so I always say when mom is happy, you know, everybody's happy. And so it trickles down when you take care of yourself, when you can help, you know, again, any doctor that you go to that's worthwhile to go to will start with with doctors.

You'll talked about clean air, clean water, clean food. They'll start there. So you can start there today. You really can. I did want to ask you if you had a brand of air filter that you like.

Yeah. So, Austin Air is what I have in my house and my office, and Ikea is another good one. And so is Air Doctor. Those are the top three that I use and love.

And all of those have both the Hepa filter and the VOC filter. Okay, great. I knew we were going to, we were going to get that question, so we'll just answer it now.

Well, I think we've went through some amazing topics with you. I know I could interview you for about 24 hours and dig deep on these. But you yourself have a podcast where you, have some really great guests on there.

And the name is Doctor Jill. Right? It's pretty simple. Yep. Doctor, your life doctors do a lot, so I would encourage anyone. If you're not listening to that podcast.

Really excellent guest. She really does a great job of making it very practical. And also weaving in the science, because we have a lot of practitioners who are listening, who want to know about toll like receptors and nail one data and things like that.

So very practical. The information on there, where else can people find you, doctor Jill. Yeah. So my main site is my name, Jill Carnahan. Dot com loads and loads of free resources, articles, etc.

all there. If you want to get the book read unexpected a.com and I have lots of free bonuses there a free lecture on mast cell activation, a free chapter that's not included in the book, and a coloring journal so you can induce a flow state.

So that's all free there. Read an expected.com and be sure and catch me on Instagram. Just Doctor Jill Carnahan. I do all kinds of fun, silly things on Instagram.

Nice. Well, awesome. Well, thank you so much for being so generous with your time today, doctor Jill. I look forward to meeting you in person. I know you teach for a forum, and I'm usually at all those conferences, but again, thank you so much for your time and your knowledge today.

You're welcome. Kelly, it was fun.

Where to find Doctor Jill and closing remarks

Thank you for joining me, doctor Kelly Hagerman on the thyroid series for the doctor Talks podcast. I hope you found this episode informative and engaging.

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