Heart Threats You Never Knew: Hypercoagulability And Biofilms Transcript

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Introduction and Guest Background

Hello, everyone. Doctor Jack Wolfson, cardiologist. Welcome to another episode of the Heart Attack and Stroke Prevention Summit, where we bring you the best and the brightest in the medical field to talk about preventing heart attacks and strokes.

And when I put together this summit and I thought about superstar guests that are just so brilliant in the field, I think, of course, of Doctor Kelly McCann, who is our guest today.

First of all, let me say hello and welcome Doctor Kelly McCann. Hi, Jack. Thank you so much for having me. I really appreciate it. Well, I appreciate you having been a big fan of your work, for years.

I know at some point in the future, we're going to be seeing, a book that is, coming out from you. Of course, you got a great website, and you are still actively seeing people.

And I think a lot of people who are listening to you speak today are going to want I want to come see you as patients. And I know you've already got a long wait list of people who want to see you, but let me say let me let me share why.

So as a functional and integrative physician, Doctor Kelly McCann utilizes her extensive knowledge of root causes in her thriving practice this spring center located in beautiful Costa mesa, California.

While you're in Costa mesa, definitely go visit my friends over at Fermentation Farm. But back to Doctor Kelly here. Lectures regularly and professional conferences again.

She's all over as far as, know the best holistic conferences in the world. And and she's just an expert at Marcel activation syndrome, MCAs, which we'll talk about mold illness, chronic infections, metals, all other environmental toxins.

And she's on the board of directors for two professional organizations that are just leaders in the space, the American Academy of Environmental Medicine and the International Society for Environmentally Acquired Illness graduated from Tulane University.

So despite all those different Mardi Gras days and all that stuff that she went to and Jazz Fest, she still is a luminary. And actually did a combined.

I forgot about this, Doctor Kelly, about the, combined internal medicine and pediatrics, in, in Arizona. Good. Sam, you and I talked about that briefly, before as well.

All right. So she's, spoken all over, got great information. Lives with her husband in the great state of California. And let's talk about Doctor Kelly.

You're the title of this presentation. Mast cell activation syndrome. Hyper coagulant bility and biofilms and their impact, leading people to have heart attacks and strokes.

Hit me with it. Doctor Kelly. Well, we now know that Marcel activation is, And actually, Marcel is in general, whether you have the syndrome of activation or not, muscles are a part of our innate immune system, and their job is to fight foreign invaders.

And when they perceive foreign invaders anywhere in the body, what they do is they release a bunch of inflammatory mediators. And these mediators are cytokines, chemokines, different kinds of things.

Most most people have heard of histamine, right.

Mast Cell Activation and Inflammation

Histamine gets released. Serotonin it reduced. It can they can reduce release enzymes all sorts of molecules that will have an inflammatory cascade of effect.

Because what they want to do is call more immune cells to the area where they perceive this threat. And so what happens then is that if there's been an environmental toxic, an exposure, if there's a mold exposure, if there's an infection, mast cells are on the cutting edge of coming to help save the body.

And then they're the ones that are calling the alarm, sounding the alarm to bring these other cells together. And so what happens then is that they can be the mediators that drive that inflammatory response.

They can be the mediators that drive the fibrosis that happens after somebody has a cardiac event, for example. And so they're really key and they're doing their job.

But what what is happening now because of all of the environmental chemicals, because of all of the mold exposures, we're just our poor little mast cells are getting bombarded all the time.

It's like there is, a low grade fire everywhere in the body that they're trying to put out on a regular basis. And so, we just have this ongoing low level inflammatory response to all of the things in our environment that are coming in, whether that plastics through our drinking water or, you know, this phenols, pesticides through our food, the particulate matter in the air that we're breathing and, the mold and mycotoxins exposures, if we're in a moldy home, all of these things are driving this low life, low level inflammation and for those people who may have a genetic predisposition to cardiovascular disease, it's manifesting as endothelial dysfunction.

And many of them, leading to atherosclerosis, which then leads to cardiovascular or cerebrovascular, complications. That's a great, opening statement.

So I, I sincerely appreciate that. So is it really the mast cells are not incorrect. Right. They're just responding to the environmental stimuli. Right? Right.

So in the vast majority of people, they may not be aberrant. They may not be abnormal. They're doing their job. Now there is a condition called mast cell activation syndrome where the mast cells have gone a little bit of a little bit rogue, and they are starting to react to things that normally we shouldn't react to, like good healthy food.

You know, our loved ones, just the things that were exposed to pressure, temperature changes, things like that. And so there is a spectrum of mast cell reactivity where we have normal mast cells, and a normal response times.

But then there are some people who have this activated mast cell activation where the cells are perceiving danger, where there is no danger. And, you know, the rates of muscle activation before the pandemic were thought to be about 17% of the population.

I actually think it's a lot higher now with Covid because Covid was causing the cytokine storm in many, many people. And that was, and that's in large part being driven by mast cells.

And so it's quite possible now that that the rates of mass cell activation are 20% in the population, 25% of the population, all these young kids with pots and, people with long haul Covid, there's definitely a muscle mass cell activation component there to.

And what are the main kind of what are what are the basic symptoms or the most common, maybe early symptoms of this mast cell response that people can look into.

And then what would be the more, you know, sinister, symptoms that people would have from MCAs? So many

people think of, mast cell activation syndrome or MCAs as a histamine issue, where they might, have a lot of GI symptoms.

They might have a lot of upper airway symptoms, sinus symptoms, you know, runny nose, itchy, watery eyes. That's possible, but not everybody has to have those symptoms.

It's quite it's quite likely that they could have more dermatologic symptoms. They might have more cardiac symptoms. Like I mentioned with, postural orthostatic tachycardic syndrome.

You can get a disorder. Nomi. You can get, chest pain. You can get any sort of itis. Right. So we could get, inflammation in the lungs. You can get inflammation in the heart.

Inflammation in the gastrointestinal tract. So lots and lots of GI symptoms are oftentimes, many people will present with fatigue, muscle aches and pains, joint pains, people can develop interstitial cystitis.

A lot of women who have muscle activation will have, a wide variety of, urogenital issues. So they might have, irritable bladder, irritable bowel. They can also have, endometriosis, painful periods, PMS, things like that.

For men you could have the prostatitis. Really, any system in the body can be impacted by muscle activation. And so oftentimes it's not it's not the individual symptoms that people have.

It's the constellation of symptoms. So the more inflammatory, allergic symptoms that I see in multiple systems of the body, the more suspicious I am of nasal activation syndrome.

And you kind of alluded to this before where you were talking about this cell danger response. Is that just a kind of a continuum, a more severe case of mcats?

Are there are there more cells that are involved? Maybe then the mast cells maybe talk about this really? Because, I mean, you and I both, you know, went to, you know, four years of medical training and whenever we're talking about cell danger, response, I think that's kind of like a newer thing, although newer diagnosis, but obviously many, many, many years in the making.

But maybe talk about that cell danger response. Yeah. I mean, I do think that the cell danger response refers to all cells in the body. And, you know, because there's this continual, communication in between mast cells and all the other cells in the body when any cell feels threatened, whether it's a muscle or, liver cell or a, you know, cardiac cell, and they get shifted into the cell.

Danger response. That sends the signal broader that the body is in danger.

Cell Danger Response, Stress, and Trauma

That's the world is not safe. And the, the physical feelings that most people feel when they, experience being in the cell. Dangerous. Is that sickness syndrome.

So we get fatigued. We want to just, like, go hide in our beds. We don't have the energy we get. Post exertional malaise, exercise intolerance, these sorts of, symptoms because our cells are literally shutting down.

I'm saying the world is not safe. We have to. We have to run away. We have to hide. Is there, an an emotional component? Can our emotions trigger, mixed?

Can our emotions trigger, the cell danger response? Absolutely. We know that there are receptors on the mast cell for cortisol. And and stress makes everything worse, right?

So when people are, oftentimes I'll have patients and they may be managing their or symptoms, they may be doing okay with life and a stressor hits them.

Could be a death of a parent. They get in a car accident, they get another, infection. They move into a moldy house, they go through a divorce. Any stressor can upset the status quo.

And so they're going to be tripped into a more aggressive, inflammatory response. A more, more of the cells go into this, the CDR, the cell danger response.

And one of the things that I've really found with most patients is that it's not just the current world stressors that are driving the cars. In fact, most of these patients have also experience traumatic events earlier in childhood.

So they may have experienced, any of the aces. So the adverse childhood events, whether that's the death of a parent, abuse, sexual abuse, physical abuse, parents getting divorced, neglect, you know, and the truth is that everyone has some sort of trauma.

It may not be the big T trauma. It could be the little T trauma. And that sets up a belief about the world that we're not safe. Right. And when we have a perception that aren't, we are not safe in our minds and our hearts.

Our bodies feel that too. That gets translated to our mast cells. And I and I think that the mast cells are responding to that. And so as part of a holistic plan to help people get from not feeling well to being well, we really do have to not just address the physical things the mast cells give you.

Marcel. Stabilizers. We have to address the nervous system dysfunction, the vagus nerve, and the fact that it's stuck in fight or flight or freeze all the time, we have to address the limbic system, which is the ancient part of the brain that takes our experiences and turns them into memory, and maybe even address the spiritual beliefs that people have about themselves, you know, do I deserve to be here on this planet?

Am I safe to be here? All of these really profound questions that, don't often come into a conversation with a medical doctor. I you mean that a medical doctor in the 60s in the exam room doesn't get to unpack all of the, spiritual components and childhood components and environmental components?

It's I mean, it's really it's just so amazing when you think back about all of our training and education and how, like, none of that stuff was ever mentioned.

But that's why you and I get to mention it now. How much, if any, does, genetics, and genetic predisposition to, mixed cell danger? How much do genetics play a role?

So I definitely think that genetics play a role. I mean, we have to, right? Apples don't fall far from the tree. If you look at people's parents, you can see.

You can see not just the physical resemblances, but the, the emotional patterns, the the way that we are in the world. However, Marcus, the research shows that Marcus is not not a, germline genetic defect.

It is a somatic defect, meaning that, I mean, I do think that there is a predisposition to being an allergic person, a predisposition to being, more sensitive, even a predisposition to cardiovascular disease and that hypercritical ability we when we talk about that, there's there's definitely a genetic component there, but, but according to the literature, Marcus is a somatic, genetic change, which is part of the reason why it looks different in everyone.

As well as, you know, some people might have some family members that are affected, but other family members are not affected due to the life circumstances that people, have in their, you know, in their experiences.

And so, you know, we touched on that subject in briefly about hyper coagulant ability. What is hyper Bill, before we get into kind of what I guess, you know, causes of it and we kind of touched on it a little bit already.

But what is hyper coagulant ability and why is that important when we consider heart attack and stroke risk? Well, we've got the, the tubes, right. The, the, blood vessels.

We talk a lot about the endothelium that and the inner lining of the blood vessel. That's where things are going awry when we're talking about the development of atherosclerosis.

However, we also have to consider the blood itself, right? Because it's actually the blood that is clotting in many parts, whether it's, with an atherosclerotic plaque that gets dislodged and then you have, a clot that that forms around it, and it turns out that there's a lot more genetic risk for cargo ability than I think we really realized, I've been doing, I've been doing assessments genetically of my patients.

Now, granted, I have a complex chronic illness patient population. And what I'm finding is that, you know, when we're looking at the coagulation in terms of, increased clotting, things like factor five, Leiden, prothrombin two mutation protein, C, protein antithrombin three, those are definitely present.

Hypercoagulability and Clotting Risk

Then things like elevated LP, little A that can also predispose people to be a little bit more hyper calculable. But the one that I'm finding most fascinating and most common is actually plasminogen activator inhibitor one.

We call it pi one. And, there are two genes, right? One from mom and one from dad. The normal gene is called 5G, 5G. The abnormal gene that increases the clotting is called 4G.

And I would guesstimate 85 to 90% of my patients whom I've checked are 4G or, 4G, 4G, or heterozygous with one copy of the abnormal gene. And what is interesting is that this happens on the breakdown of causality.

So it's not like these patients are walking around at risk for a DVT if they go on a long car ride. But if they happen to have an inflammatory problem and their blood gets a little bit stickier, they are less capable of breaking down that clot less capable of breaking down that fibrin.

And so what I find in their family histories is that most of the time, they have a family history of cardiovascular disease, heart attack or stroke. And I've got it on both sides of my family and, 4G, 4G.

But no one in my life or in my family has ever had a pulmonary embolism or a, a DVT, a deep vein thrombosis. So the way that I'm thinking about it is that it's just this stickier our blood, that as we age, we're less, active.

Or maybe my ancestors were less active. We develop cardiovascular, develop the atherosclerosis because of all the inflammatory cascade and all the toxins and all the things that you're talking to everybody else about and that we can talk about, too.

But then if there if these blood clots, if the fibrin starts to stick together, we can't break it down fast enough. And then you end up with a clot and a heart attack.

So that's what I've been seeing with the hypercritical ability piece of it. Interesting. So we all thought that 5G was worse than 4G, but it turns out, actually, in this case, 4G is worse than 5G.

And I make the pun as far as it relates to electromagnetic energies, 5G versus 4G. In this case, 4G was, you know, and it's it. And then you also mentioned LP little A, and that's one of the factors about LP.

Little is, you know, is that LP delay interferes with the conversion of plasminogen into plasma. And so now you've got like this double whammy to this anti-clotting, cascade of the body as well.

And I'm you can expand on this because I would say when I think about that from a supplement standpoint, that's just another perfect indication for natto kinase and some of these other fibrin analytics in that scenario.

Have you found similar? Yes, I typically use lumbar kinase, specifically Baluch. I find that that's more potent. And it tends to work better. There is one blood marker that I find actually probably two blood markers that I find helpful to track.

One is called prothrombin fragment one plus two. If you order it through lab core, it's 1.2. If you order it through quest, and if that's elevated, that person is actively clotting.

And what what they're doing is that they're making extra clotting and they've got these byproducts and that's, that's how you can tell. And then there is a compensatory marker called thrombin.

Antithrombin that I will also check. And just kind of as an inflammatory check I'll check the fibrinogen activity. It was interesting what I was taught was to check the plasminogen activator inhibitor activity.

And then if that was positive, check the genetics. But I just decided to start checking the genetics. And I'm so glad that I did, because the activity did not necessarily correlate with the genetics at all.

In fact, the people who had elevated Pi one activity actually were metabolically dysfunctional. So they would oftentimes have diabetes or they'd have pre-diabetes.

And it didn't seem to correlate with whether or not they had an elevated, prothrombin fragment one plus two, or if they were, clotting at all, or if they had the genetic.

So I had a number of patients with elevated Pi one activity and the normal five g 5G. Yeah. And I think that's the importance of checking all these different parameters.

I mean the more information we get right the better. And one marker. What about D-dimer D D-dimer come into the equation here. And what is, are there faults with with D-dimer to nonspecific.

Maybe it's it's a little nonspecific. My understanding is it's a little bit more historical than active. I mean, I do check it, right. And oftentimes if it's elevated, I will put people on the fiber analytics like natto kinase or, or the blue.

And it depends. My choice may vary depending upon other other aspects. What else they have going on with because what happens with these people who are hyper calculable is that they tend to have a harder time with biofilms.

So biofilms are a mutually nucleated polysaccharide structure that the bacteria sometimes fungus, live in. And they basically have a party there. So, we have everywhere we have bacteria, we have biofilms.

So we have, microbiome in our gastrointestinal tract that has, the biofilm in our nasal passages and our sinuses in our teeth. For people who are like, what is a biofilm plaque?

Plaque is a biofilm. And we also have biofilms in our, bladder. Which is interesting. I think, you know, I never knew that there were we, we were taught in school that the bladder was sterile, but it's so it's not sterile.

There are bacteria living in there. There's some commensal which are the normal bacteria. But there's a lot of pathogen bacteria in there. And what happens in people who are hyper calculable is that the bacteria make the biofilm, and then the person overlays that with fibrin.

Biofilms to, I'm assuming protect the body. Right. But it ends up reinforcing the biofilm, making things much more difficult for the person and their immune systems to get in and get at those bacteria.

Okay. So you mentioned biofilms and the ramifications of that. And then what are your favorite choices? I guess, to maybe break through the biofilms. It probably is dependent on the location of maybe what you're trying to target.

Biofilms, Mold, and Water Damage

Absolutely depends on the person, too, and what they're able to tolerate. So, for example, if we're focusing on sinus issues, they got recurrent sinusitis.

I can use, topical biofilms like, it's clear. For example, let's see, you can see it there, is a silent hall. You can use an EDTA nasal spray. There's a bunch of other things that you can use in terms of, oral biofilm busters.

There are a couple of products out there that I really like. Like, Kirkman Biofilm Defense, Research Nutritionals has one called Bio Disrupt. There's one from priority one called biofilm phase two advanced that has, bismuth in it.

So it depends on what bacteria we're trying to target. It depends on the location. It depends on the sensitivity of the patient. All all of that. You know, in the interview process here.

I know you'll like this too, because you remember back from medical school and residency and you and, I am in pediatrics. You know, it's just it's kind of like, I feel like I'm the, I'm the, round.

I'm doing the rounds that I get to pimp all the other medical doctors, like the young doctors, you know, like yourself on this stuff. Sore throat. More questions. Right. So, before we dive into, mold.

And I also want to touch on water damage bacteria and see if you got an opinion on that. But before we hit that, you're checking a lot of labs. What do you think about, your stance on.

Not your stance, but how do you approach high homocysteine and, the testing of HFR? You know, 677 1298. Where are we at with that? I do check those. I prefer to check the, the, the deeper panel rather than just the MT4.

I mean, I know the studies show that it's about 50% and 50% of the population. They have 1 or 2, actually, and just kind of ballpark in my chronic illness patient population when I was checking them for it was far higher than that.

And so I do find that looking at more of the methylation snips is important. I prefer Bob Miller's, functional genomic analysis because he's a brilliant guy and has put together not just methylation, but detoxification and, oxalate issues, histamine issues, mast cell, glutathione.

So it's, it's, platform that looks at many, many different genes and then is able to help the practitioner and the patient prioritize how you really need to go about addressing these things, because methylation actually would come much later in the plan.

It's patients have mast cell activation if they're inflamed. If their detox pathways are not working. If they're, you know, antioxidant pathways aren't really working.

You want to do that first long before you're adding in methylation support and trying to lower that homocysteine. And you find that homocysteine often comes down naturally when you hit those, those foundational things.

First, when you're you're again, you're eating well, you're living well. You're thinking, well that numbers naturally tend to improve. I think that they do.

I mean, sometimes it's hard to say because we're doing so many things all at once. Right? So, and usually I find that adding the methylation support when necessary, the metal fully the, the B12, etc.

does help. There are a handful of situations where they, the, homocysteine won't come down. And that can also be an indication that lead is a burden in the body.

So I've seen that with some of my older patients where I just think, they were exposed to a lot of lead when they were younger, as they're aging, the lead that was safely in their bones is now leaching out of the bones.

And getting into the bloodstream, into the tissues. Using up their, their methylation support and driving that homocysteine to be more elevated and also.

Right, potentially interfering with the actual enzyme itself, the enzyme itself, the reductase enzyme that it's that becomes dysfunctional because of the metals. Great stuff.

All right, talk me through, water damage. You're in the, again. You're in California. Humidity, water. This is a problem with people you see from all over the country and all over the world.

It doesn't matter what state or what country you live in. That's a bad guy in California, which I could. But that being said, what, water damage, mold and bacteria.

Start me off. Okay? So in in a house, there are potentially anywhere from 25 to 35, locations where you could have water damage every single window door.

Many of the the Joyce that connect them connects the roof. All of the piping. So that's your bathroom, your kitchen, your, you know, dishwasher, your, water to and and your icemaker and your refrigerator, your hot water heater, laundry room.

So many places for potential water intrusion. One of the things that I have found in California is that we like our postcard, we like our postcard houses to look like the East Coast.

So we have shrubbery and flowers right up against the houses. But unlike the East coast, where it rains on a regular basis, we have to have a sprinkler system.

And I can't tell you the amount of sprinkler systems I know are hitting these homes, and it's causing, chronic source of moisture that is leading to these, this mold and water damage in these buildings.

I have lived in ten almost ten, soon to be 11 houses in Orange County. All ten of them were moldy. And I also recently learned that, you know, in places like California, the the builders are not really concerned about building structures for inclement weather, like, you know, too much, ice and cold and everything.

So they're often not insulated. They're just not built. Well, the grading will come into the slab rather than away from the slab. And then if the slab, which is in the, in the ground is moist all the time, what whether what people are doing now is they're putting the sheetrock up against the slab.

And if the slab is moist and the sheetrock touches the slab at any point, it's supposed to be at least an inch and a half above the slab. If it's touching the slab, you're going to get wicking up into the the sheetrock and you're going to have, again, a chronic source of moisture that has nothing to do with the pipes.

And I think that this is a tremendous issue in building in, in anywhere in the country, but especially in places where they just throw up the buildings really quickly.

And so you. Have you seen a lot of this water damage bacteria in the sense like we'll do a, you know, we ordered the number eight Swiffer test from Enviro Bionics on.

Pretty much all of my patients have to have that test done. So we're looking for environmental molds. But we're also looking for these water damage, bacteria.

Because a lot of times the army comes back negative and you know that they're sick. You know, something's going on, you know, from this. And again, they never check the bacteria.

And when they when you check the bacteria inside, you have much experience, in that area. Yes. I've just started testing that I on my CDs. Is that the bacteria you're referring to? Yeah.

So we call them acting ohs. Acting on my CDs. Yes. There can be a huge issue. Very challenging to, to help patients mediate that. It requires, a ton of cleaning.

I have looked at, at, acting nose for people and started them on the path. It can be completely overwhelming. So yes, we do do that. And then you can look at endotoxins as well.

I mean, I think, I think there are a couple of issues. And what I would say is one, an Army test is great, but the score does not really tell you the whole story.

I think I can't stress the importance of working with a good indoor environmental professional. I think that that is key. The more sick people are, the more they absolutely have to work with an indoor environmental professional.

I would strongly encourage people, if you're, wanting to work with a professional, go to ICC. Org. That's the International Society for Environmentally Acquired Illness.

These are the indoor environmental professionals that have been vetted by this professional organization, of which I'm on the board. And these folks understand how you have to approach the assessment of the House from a from a clinical medical perspective.

Right. These are the doctors for your house, and they understand you can't get I mean, personally, I would never just do an Army test and an air test and say, oh, you're good when clearly you're not okay if you're feeling sick.

And that IEP has been critical at identifying the sources. It could be in a crawl space. It could be in a place it developed. We now have they now have, a way to assess called pathways, which is if you look all around the house and you can't find it, they can actually assess all the way around the essentially the base of the house on the outside of the house to see where is the water intrusion coming from.

So they have so many, different tools accessible to them. And then the good ones will be able to help you as a client to figure out which places in the house are going to be the most important to remediate.

Right? Because yes, there's mold everywhere.

Advocacy, Hope, and Closing Remarks

And yes, we can't afford to remediate everywhere, but we have to remediate in the most important places. And that indoor environmental professional can do that.

And then same to the remediation company has to understand that they have to be doing medically relevant remediation, can't just be doing superficial remediation for patients who are sick in water damaged buildings.

Okay. Final question, because I know you've seen thousands and thousands of patients, and I'm going to venture to guess that the vast majority are women, not because you're a woman and they're coming to see you because you're a woman.

It's because the women are struggling. What do you say to all the women who are struggling, who are looking for answers, but they come in with their husband and their husband?

As you know, he's got his arms crossed. He's got this frown on his face. He doesn't know why they're there. He's already spent he believes he spent thousands and thousands of dollars on his wife, and she's not getting any better.

And then now you come in and say, you know, all this other stuff when she's going to require him to spend even more money and more time. And he, of course, is like, can you just give my wife some Prozac, please?

What do you say to all those women out there who are encountering this opposition from their spouse? That's a good question. And yes, it does happen on a regular basis.

What I would say is you have to believe in yourself and you have to, Know that you have to advocate for yourself. If you don't advocate for yourself, no one else will.

And find a practitioner who is willing to support you, who doesn't discount you, and who is willing to partner with

you, and to also who's willing to talk to your husband and meet him where he's at.

And be be your advocate in helping you navigate this. It's tough, I get it. It's tough. I mean, I see the converse too, right? And my family, my husband is more sick than I am.

But, we need to we need to really own what our experiences. And don't let anybody discount us and believe that you can get better because the truth is, you can get better from mold.

You can get better from massage activation. You can get better from absolutely any medical condition that you put your mind to and advocate for yourself.

Educate yourself. Watch these summits. You know, buy books, listen to podcasts. The information is out there. You will find, the practitioners that you need to connect with who will get you from where you are now to where you want to be, and to always hold on to that hope, because that's really that's going to be the thing that gets you out of bed in the morning.

Is that hope that you can get better. And don't just take the Prozac. It's you do not have a SSRI deficiency. Don't believe, don't believe that. That's just gaslighting.

And you don't need that. Love it. Love those final words. All right everyone, doctor Kelly McCann, thank you so much. Excited for your upcoming book. And again, your website.

And of course, the fact you're actively seeing patients and you can see why you're absolutely brilliant and just, so well versed in all these different areas.

So again, Doctor Kelly McCann, thank you so much for another great episode of the Heart Attack and Stroke Prevention Summit. We'll see you next time.