# Mike Whitmer:

Okay. Hello and thank you for joining us today. My name is Mike Whitmer with NCMIC insurance company, and I'm going to be moderating today's discussion. We're talking today with Dr. Mike Powell about Alzheimer's disease and the role that chiropractors play with these patients. Unfortunately, this is a topic that I am all too familiar with, as it has greatly impacted my family. More than 6 million people in the US are living with Alzheimer's disease. The Alzheimer's Association estimates that number will be 13 million by the year 2050. So, what are chiropractors faced with when a patient with Alzheimer's or one who you may suspect is undiagnosed walks into the practice?

### Mike Whitmer:

To help us dig into this topic, we have with us, Dr. Mike Powell. Dr. Powell has been teaching nationally and abroad for 20 years. He is a second generation chiropractor, a graduate of Logan College of Chiropractic, and has practiced in Cedar Rapids, Iowa, since 1996. The majority of Dr. Powell's patients have well established neurological diagnoses and complex conditions that have not improved despite extensive care. He has a passion for sharing what he's learned from research, other doctors and his patients to help as many chiropractors as possible. We're happy that he's here today to help share his insights around Alzheimer's disease. So, Dr. Powell, thank you for joining us and helping us with this topic.

# Dr. Mike Powell:

Good to be here, Mike.

## Mike Whitmer:

Let's go ahead and jump right in. What is Alzheimer's, and when someone has it, what isn't working right?

# Dr. Mike Powell:

Okay. Well, just basic simple sort of definition is it's age related cognitive decline. It's cognitive decline that if it continues certainly impairs a person and can cost them their independence. I would imagine that pretty much all of us, our lives are touched by Alzheimer's disease in one way or another. It's fairly common. My mother passed with, not really Alzheimer's, but another form of dementia. So, with that in mind, Alzheimer's is a dementia. Dementia is an umbrella term for a family of age related cognitive decline, Alzheimer's disease being the most common one, but there are some other ones as well, some that are associated with Parkinson's, for example.

#### Dr. Mike Powell:

My mother had one that is really similar to Alzheimer's, only it damages or degenerates more of the front part of the brain as opposed to the sides. And that was called frontotemporal dementia. But Alzheimer's is the main one. Really, irregardless of which dementia that we're talking about, we're talking about a breakdown in function in the nervous system over time, so some of the mechanisms we think are the same between these things. That's just in broad strokes what Alzheimer's is.

# Mike Whitmer:

Yeah. So, doctors of chiropractic all over the country see patients living with Alzheimer's. What's the chiropractor's role in the care of somebody living with Alzheimer's?

#### Dr. Mike Powell:

Sure. A couple things, and one of them is certainly people with dementias need chiropractic care in many, many different situations, just like everybody else. So, irregardless of whether the care is aimed at trying to reverse the cognitive decline or not, or manage it better, I think chiropractors need to be aware that folks with Alzheimer's need more reminders for their appointments. They oftentimes will have folks that come with them that bring them rides and things like that. So, accommodations in your practice that you see with other patients that have some challenges with their independence as well. We have those general outline of things.

#### Dr. Mike Powell:

In our clinic, we see people that are concerned because they're experiencing cognitive decline or their family members are, and we're actually doing things based on research, really evidence informed things, to change that, to try to either prevent it, slow it, or in some cases, reverse it. So, there is a role for a chiropractor in that sense. Chiropractors are very well positioned for that, because what we know with more and more certainty all the time is that in a person, as their brain starts to degenerate and they're having issues that ultimately may result in Alzheimer's disease, that it does not seem to be the case that this one protein or this one factor has gone haywire. If we can just get that thing to work right or replace it or substitute it or block that one thing, that that's going to be our answer in stopping this thing, slowing it or reversing it.

# Dr. Mike Powell:

That's called a monotherapy, and that's where the vast majority of research into Alzheimer's care, Alzheimer's treatment has been focused for the last 30 years, and unfortunately hasn't bore much fruit. What we've come to realize, and this is not really just me, it's out of research labs and into practice, that's filtered my way and other chiropractor's way as well, is that Alzheimer's is caused by multiple factors that trigger genes to tell cells in the brain to either tip towards degeneration, that would be the road to Alzheimer's, or tip towards a more neuroprotective expression, which would help maintain healthy cognition for years and years and years. Just like osteoporosis, heart disease, diabetes, there's really not one cause. There may be a major cause in one person, but a variety of people have different reasons they have these things, and they're difficult disorders. They're extremely common disorders.

# Dr. Mike Powell:

They all have things that a person can do to improve them. The things that I might do to improve my issue with, let's say it's diabetes, might need to be a little different than someone else who has it for a little different reason. So, what we're seeing is a lot of parallels with Alzheimer's disease. Since chiropractors are positioned well at lifestyle, trying to identify causes of things, another big challenge that I think is really difficult throughout healthcare is that an awful lot of chiropractors try to get their patients to do things differently, to make different choices, make different decisions, do things that are kind of hard, and do it for the long run. It's not a, "Here, take this bottle of stuff, take one in the

morning, one in the evening, and then we'll check back in with you in six months and see how that's going." It would be great if that worked for Alzheimer's, but it doesn't.

#### Mike Whitmer:

Right, right.

#### Dr. Mike Powell:

We know that for sure that it doesn't, in spite a whole lot of resources. Tipping things in a healthier direction and identifying what those things are, that seems to be the wave of Alzheimer's care that has significant evidence that it's working for people.

#### Mike Whitmer:

Good. Along those lines, are there exercises or activities specifically that we can give to our patients to help them? Not just the patient that is diagnosed and is down the path of living with Alzheimer's, but preventative too, somebody in my age group that is concerned about this in the future, family history, that sort of thing, what can I do to help prevent this and have a healthier brain health?

#### Dr. Mike Powell:

Sure. Let me take a big swing at that.

# Mike Whitmer:

Sure, sure.

#### Dr. Mike Powell:

I'll go back just a little bit. The best practices that we know of so far seem to be related to figuring out why it is that you are having some changes in your brain. Let's say you are, either you're noticing some things and maybe nobody else does, we call that subjective cognitive impairment, or other people are noticing it a little bit, you haven't been diagnosed with anything, but it's kind of obvious something's different here. We call that mild cognitive impairment, MCI, or dementia, which would be the next step. There's been some metrics done, some neuropsych testing, and you're definitely not functioning at a level that we would expect for age matched peers. So, trying to figure out why this is happening in you.

## Dr. Mike Powell:

We know that there are a multiplicity of factors that can tip these genes to make the brain work not as well or degenerate or tip it towards protection, health, good connections in brain cells. Four of the biggest factors that seem to tip us the wrong direction are poor blood sugar regulation. We call that disglycemic inflammation, so inflammatory chemistry in the body signals things to be different, and it seems to signal brain cells to tip the wrong way, toxins. So, whether that's toxic exposures to things that like mercury, led, some of the big ones that we know, but there's others as well, toxic exposures or difficulties with your physiology clearing toxins. We all are exposed to stuff and we all accumulate things, at least a little bit, but it needs to be cleared. So, as long as you can get rid of it, that has a hard time having a chronic effect on you. Blood sugar regulation, toxic exposure, inflammation, and then

atrophic factors, meaning neurotransmitters and hormones that you may not have the correct abundance or correct amounts of.

#### Dr. Mike Powell:

That's where this little treasure hunt starts in figuring out what's making your brain not work as well. If we can identify that, then on an individualized basis, doing things that document and measure those factors and then things that would then address that in an individual, let's say it's the blood sugar regulation issue, then we would look at a lot about what you're eating, exercise, and measuring your blood sugar, measuring your insulin levels, and specific strategies related to that, whereas in someone else, we might do things more associated with getting their inflammatory markers down or getting their toxic load down. That's individualized. Along with that, we can do things with testing to figure out what areas of the brain aren't working as well as they should be, and then sometimes we can do things to strengthen those areas with some specificity. Those are patient specific.

# Dr. Mike Powell:

Irregardless, if a person feels they may be experiencing some cognitive decline or they're diagnosed with something, and maybe they go through the extensive process of getting the things we identified or I just mentioned, irregardless, everybody seems to do better addressing a certain set of things. Here are the best practices for yourself and also the best practices for the chiropractor in their clinic that really would apply to everyone irregardless of the reason. I just want to give you the caveat that Alzheimer's is a complicated and disabling disorder. It's not easy to slow it down and it's not easy to turn the train around. So, the more of these things you can address, so the stuff I'm going to share with you now, but plus the specific causes, if we can figure that out, and localizing areas of brain and trying to strengthen them, stacking all those cards up in the deck give you a better hand to work with, because you're not starting with a very good hand. Okay?

# Dr. Mike Powell:

Getting into ketosis or ketogenic diet is definitely associated with cognitive improvement in this situation. That usually involves some caloric restriction and a diet that's fairly high in healthy fats, low to moderate in proteins, and very, very low in carbohydrates. We like to get into a ketotic range of about 1.5. You usually measure this with blood, but it can also be done with breath or with urine, but blood seems to be most reliable. 1.5 milli moles per liter, 1.5 milli molar up to four. So, if doctors dig around a little bit about getting in into ketosis, you'll see what those values mean. That's the magic number, 1.5 or a little bit higher with that. That's a big deal. With that, it also is best if the patient fasts a bit, intermittent fasting, so we're looking at somewhere around a 10 hour eating window each day.

# Dr. Mike Powell:

So, maybe your first meal of the day is at 9:00 AM and then you eat a bit throughout the day, this ketogenic diet, and then the last calories of the day would be about 7:00 PM. That's a 10 hour eating window, so then you would be fasting the other 14 hours. That's a pretty big deal. People with lots of different disorders like Alzheimer's, in this case, the brain accumulates some things that are causing problems, misfolded proteins, you hear about things like amyloid plaques, [inaudible 00:14:48], nucleam, here are some of the things that a lot of the research over the last 30 years has been aimed at either clearing or preventing. So, we do want to get rid of those things. If you don't eat for, let's say, 14

hours, your body starts to go through a process, kind of the same one that you would go through if you didn't go to the grocery store for a while.

#### Dr. Mike Powell:

So, if you kept going to the grocery store for a week or so, you're probably opening up the refrigerator door and looking at maybe eating some leftovers because the cupboard's getting bare. Then if you still aren't going, now you're even eating the foods you don't like because you just need anything, and you're tossing out the stuff that got bad in the back of the refrigerator. So, you're either recycling and using things that were starting to build up back there, or you're clearing things and cleaning out the garbage. That process is called autophagy. Auto itself, phagy is eat. So, you consume or you reuse these things that are starting to accumulate and cause problems. That's where this ketosis and this intermittent fasting is huge. Okay? People with low body mass index, people that are really hypoglycemic or have reactive hypoglycemia, we have to kind of modify that a little bit because they don't do well if their blood sugar is low for a period of time. But for the vast majority of us, we definitely need that, so that's key. That's a no brainer for most people. Okay?

#### Dr. Mike Powell:

Next, we want to increase the number of basically neural antioxidants in our system. So, eating the vegetables and the carbs that we eat need to be high in fiber and high in color. So, very colorful vegetables, very colorful fruits tend to be the best ones. Then fiber tends to help with this as well. You can't hardly get enough to have as therapeutic effect as we'd like, especially if you're battling Alzheimer's. On top of that, we supplement polyphenols, which are basically the stuff from the pigments in those things. You hear about some of the spices that are really useful, like curcumin, resveratrol, cinnamon, ginger. All of those things are among thousands of these polyphenol antioxidants. We use formulations that have a bunch of different ones in them, and that's a good way to go with that. Okay? So, there's that.

#### Dr. Mike Powell:

Also, B vitamins are very useful. Most people are low on vitamin D, so even if you're not testing it, it's probably good to take a little bit vitamin D, but we test that pretty routinely. Vitamin D can be really helpful. Then just one more factor to mention is getting more connections in the brain sound successful a pretty good idea in this situation, and it's probably a pretty good idea for any of us on. The preventative side, the more connections you have, the more resilient you are when things come along that may cost you some. So, it's good to have more connections. There's chemistry that your brain makes when conditions are right. It's kind of like Miracle Grow. It provokes nerve cells to reach out and grow more endings and connect more to the next nerve cells in their neighborhood, more synapses, synaptogenesis.

# Dr. Mike Powell:

These are called nerve growth factors. The things that we talked about diet wise seem to encourage more nerve growth factors, but also there's some things that we're finding that you could supplement that do that as well. One of them is called lion's mane mushroom. It's one of the mushrooms that people utilize therapeutically. Another one, and this is one that we use in our clinic, comes from the husk on the outside of a coffee bean, of all things. This has the chemistry that provokes nerve growth factors, and it's

called HCFC, whole coffee fruit concentrate, HCFC, whole coffee fruit concentrate or whole coffee fruit extract. We'll use that in our supplementation as well. I'll give you one more. I know this is a little long-

#### Mike Whitmer:

No, this is great. No, this is awesome. Thank you.

#### Dr. Mike Powell:

One more, and this kind of speaks to probably the most popular drug that's utilized for Alzheimer's, which is Aricept or a version where Aricept is used in combination with something else that basically makes acetylcholine last longer in the synapses of the brain. So, we supplement and we recommend diets that are higher in choline. That's the precursors for the acetylcholine neurotransmitter. Eggs are high in choline, and then in terms of supplementation, there's a form of choline called C-I-T-I, citicholine. That seems to be the most absorbable and the most readily available one to turn into acetylcholine. That's our little laundry list of nutrients on the diet side as well. Now, it seems like you asked me about exercise to kick this off.

#### Mike Whitmer:

Well, no, that's great, because one of my later questions was nutrition, and this has been a great discussion of that. One thing that I really wanted to get to was that management of the disease with diagnosed people, but also prevention I think is extremely important, especially when I see the projections that the Alzheimer's Association is putting out there for the next few decades, and the explosion of people living with Alzheimer's and dementia. This has been extremely helpful. Just a few other questions that I have for you. You've mentioned research quite a bit, and are there any exciting areas of research with respect to the treatment of Alzheimer's? Are there any breakthroughs happening? Do we have hope that in the future we're going to see a cure for Alzheimer's?

### Dr. Mike Powell:

There is. There is. Funny should ask that, Mike. If doctors listening will go to Medline, where you can type in and you can search for referee literature, Journal of Alzheimer's and Parkinsonism, Journal of Alzheimer's and Parkinsonism, 2018, title of the paper, I think I've got this right for you, Reversal of Cognitive Decline: 100 Patients. That particular paper that was published in 2018, and there's been some subsequent papers that were related to it since and some before, that paper documents 100 patients that either had a verified diagnosis through neuropsych testing, but also some with imaging, some with lab work, a variety of things, but always neuropsych testing of some kind that all either had a diagnosis of mild cognitive impairment, that means tests are showing that things are declining, or actual dementia, and most of which were Alzheimer's.

# Dr. Mike Powell:

It documents 100 patients that went on a program of some of the things that we talked about with nutrition, but more as well, and improved. Certainly by no means did all of them have an Alzheimer's diagnosis, did the treatment for six months or a year and no longer had that diagnosis. That's not true. Some of them, that is true. Okay? A handful of them went from Alzheimer's diagnosis to taking subsequent testing and imaging and no longer qualify for it. So, we have some documentation of some

of the first Alzheimer's patients that actually have gotten better. Now, with that, I want to say that one of the tests that was used in maybe 60 or 70 of the 100, one of the battery of cognitive tests is one called the Montreal Cognitive Assessment. That results in a 30 point scale. 30 is perfect. 30 is what you want. You did all the tests and everything turned out great. We get down in the mid twenties, 20 to 24, there's definitely some issues in low twenties and below, or where Alzheimer's diagnosis comes in. Okay?

#### Dr. Mike Powell:

I don't have those lines snapped perfectly for you, but that's the gist of it. I think about four and a half to five points of improvement on that scale was the average for everyone that took that test. Let's say about three quarters of those 100 people took that particular test, and the average was a four or five point improvement in that. Just for example, if I scored a 22 or 23 on it, I definitely have impairments. If after six months or a year, I now am scoring at a 27 or a 28, I probably don't. Okay? At least based on that. That's very, very encouraging. That's one particular paper. The lead author on that paper is Dr. Dale Bredesen, B-R-E-D-E-S-E-N, Bredesen. He has really been a leader in this field, a big leader. He did a lot of research at UCLA and has grown that into basically the product of that paper.

#### Dr. Mike Powell:

Any of our doctors that are interested in learning more can't go wrong looking at Dr. Bredesen's books. He's published a couple of books, and one of them recently chronicles some of those 100 patients and tells some of their stories. Then also, another book or two basically goes through what they found at their labs at UCLA that then have been implemented in clinics around the world, like what we're talking about today, and really, really has a lot of hope in both prevention, slowing, and in some cases, even reversal. So, in terms of research, that's where I would go.

# Mike Whitmer:

Yeah. That's exciting that there's that encouraging progress being made. That's great. When you have a patient come into your practice and perhaps you suspect that they have mild cognitive impairment or they're talking with you about their concerns about things that they've noticed in themselves, what does that conversation look like? Do you talk with them about the resources that are available? Do you encourage them to follow a ketogenic diet? What does that conversation look like with that patient?

#### Dr. Mike Powell:

Sure, absolutely. It definitely looks like some of the things that you were mentioning there. Certainly, people a lot of times will say, "I'm having some memory issues," or they'll put that on their intake, or all of us have these long checklists of, "Do you have osteoporosis? Do you have whatever?" And they'll check a box. So, I look at all those things on our intakes and I'll ask them about that, and they may bring it up. I do ask them for specifics about, "Okay, what are you noticing about your memory? Give me an example." Then I record that just to get an idea of what's going on. Then I'll also either ask them, "Family members mentioning to you that there's any issues, or do you think they would notice if there are?" So, I'll ask them some questions about that and oftentimes dig in a little deeper also to get a better understanding.

# Dr. Mike Powell:

This is more specific to what I do about maybe areas of brain. Is it you're forgetting your route to go somewhere or you forgetting where you put your keys? Are you forgetting people's names? That means little different things to us in terms of what areas of the brain, and that can be helpful down the road. So, I do ask them about that. But if there's a concern that they're sharing, then there's probably a concern that needs to be dug into a little bit more. A couple more things with that, one of them, and I've found this out basically from experience in my family, and then I've seen it repeat itself many times clinically, is one piece of advice I always give them and give family members is that if you've noticed something kind of odd happening, locked myself out of the house, can't believe I did that, got lost, left the burner on the stove, hour later, 'Oh, man," your thought about that should be is that it's not a one off. It's going to happen again, and it's probably going to happen more often.

### Dr. Mike Powell:

So, you need to try to impress on your patients that the reality of things is, especially if without intervention, that things are probably going to keep going the way they're going and get worse. That's not fun to hear, and it's an optimistic, but it's true. Some of these things are a pretty big deal. Safety's a big deal, right? So, that's important. To just flat out tell your patient, tell your family members, "That's the way this goes without intervention," and with intervention it may go that way as well, but it's a big deal. Secondly, I address a little bit of what we talked about earlier. I try to figure out what other health issues, maybe besides the one that brought them into the chiropractic clinic, because people don't always come in the chiropractic clinic because they've got blood sugar issues. I mean, they may, but that's not the number one cause, I don't think, that most root people come in.

# Dr. Mike Powell:

We dig into that and we try to figure out, "Okay, what do we need to do in terms of your health, or what do you need to do in terms of your health to make it so it's more a neuroprotective health situation versus your genes telling your body that some changes are happening, that it needs to shut down," we don't want that. Then, like I said, the biggies are the toxin issue, the inflammation, the hormone neurotransmitter issues and blood sugar, those are the big ones. I may need to talk to them about, "Hey, you're on diabetes medication, I think, is that right? Are you taking it? Are you checking your blood sugar? Okay. If you're not, I'm going to write a formal referral for you to go to endocrinology or get you back to your family doc," or whatever, and we may have some roles in helping them with that as well.

# Dr. Mike Powell:

So, taking care of that and then really getting them to buy in that they need to make some changes in their lifestyle and that it can make a difference. That paper with 100 patients, we have copies of it in our office. When you say, "Okay, but if I do have Alzheimer's, can I do anything to really help it anyway? I hear that medications don't really work that good." People say things like that. You show them that publication and go, "Hey, there are people that actually are getting better with this, and it's changing. It's possible for you." Please set up a note so the family members set up a notice. I guess that's how that conversation goes and that's where my head goes with it initially. Whether that's intervention from me, things that will get other people to help them with, but that's the direction it takes.

# Mike Whitmer:

All right. Great. Dr. Powell, thank you so much for joining us today. This has been fantastic information. Is there any other thing that we haven't covered that you would like to share with our listeners?

#### Dr. Mike Powell:

Yes, there is. We talked about the nutrition sort of side of it, I mentioned that a couple of these supplements tend to help nerve growth factor, which is a big deal. We want more of that. The number one thing that everybody in neuroscience can agree on that definitely increases nerve growth factor, that increases more connections in the brain is aerobic exercise. So, without question, that needs to be part of what you're doing. If you want to prevent this in you, it needs to be part of the treatment plan, the lifestyle treatment plan for everybody. Five, six times a week, 30 minutes or more of having your heart rate up a little bit, a little winded, a little sweaty, that seems to bear more fruit than weightlifting or some other things that are wonderful for you, but we're talking about preserving a healthy brain or getting an unhealthy brain to be healthier.

#### Dr. Mike Powell:

So, aerobic exercise, absolutely huge, sleep is a very, very big factor. Chiropractors are positioned well to help people with sleep between lifestyle habits, dealing with things that hurt that keep them awake. Posture position at night is just a bigger deal, as sitting at desks like you are you and I are right now, Mike. So, we're positioned to help people with that really, really well. Poor sleep is definitely associated with increased cognitive decline, so that's a big one. So, the physical exercise piece, the sleep piece, and the last one that for everybody is dealing with stress in a really good way. Not always the easiest thing for us to address with our patients, but certainly helping people identify or getting them to folks that can help them identify how to get healthy stress. Exercise is healthy stress. Spending time with your friends is healthy stress. Having a few things to juggle on your calendar, but not a lot, is healthy stress. Okay?

# Dr. Mike Powell:

Just like a little weight lifting stresses a muscle and it gets bigger and stronger, but you could certainly overdo it. Overdoing it is pretty common in our world, and to help folks get less on their plate so that they have the right things on their plate is a big deal and easier said than done, but that's a big deal. With that,, two things that I always address with people in the topic that we're talking about here with keeping a healthy brain and trying to make one that's not healthy healthier is meditation. The research is really, really good behind that. Increases nerve growth factors, increases synapses in the brain, definitely helps you deal with stress. So, getting with someone that can help you establish a meditation practice, and that can be as simple as helping you learn how to use an app on your phone.

### Dr. Mike Powell:

So, that one, and also, and I think this is more so for folks that are definitely noticing some decline, is that they pull away socially. The last person that I saw this morning before our conversation I'm seeing to specifically help, her office visit with me today is with an Alzheimer's diagnosis. So, part of our conversation we've been working with her for probably six weeks now, part of our conversation is, "That weekly golf outing that we talked about, is that set? Are you going to church every week? Because we

talked about, okay, things that you've done in your past that have been good that you've pulled away from since you've had these issues."

#### Dr. Mike Powell:

So, we've identified several of them, and part of her homework, just like an exercise or a diet change or supplementation or whatever has been very specific. "You're meeting so and so for coffee on Tuesday mornings, you're going to church every weekend," that was one of them, "And your golf," that was another one we identified that she has done in the past. But whatever the case might be, that can be a pretty important part of the prescription. So, I think that those are big, big pieces as well. Yeah. Like I said, it's not a good hand, so you got to stack up all the cards that you can, and those are the key ones.

#### Mike Whitmer:

Yeah. That's really, really interesting the way you said about the social engagements, because I think that that was a big run flag for me with my father when he stopped going to church, because he had always gone to church, and he stopped. That was a big red flag that there was something going on, because he really tried to-

# Dr. Mike Powell:

The interaction's huge, but just flat out being in a room with some other people and doing something that in the past has made you feel good, feel good about yourself. Mike, I'm just going to pull that thread a little bit more, that feeling of purpose. Even if the purpose is, "My friend's expecting me to show up for coffee, and I know they like to tell me about their kids," whatever it is, but you need a reason to show up. That's true of a lot of things, and it definitely gets harder a lot of times with more decades on us to feel that purpose. Plus when you know you're not interacting as well, and, "They can't count on me to drive them somewhere because we're not so sure I should be driving right now." So, finding something that gives a person purpose, whatever that might be, and those social interactions allow themselves to [inaudible 00:36:39].

#### Mike Whitmer:

Yeah. Just one comment. I think that the past few years with COVID, a lot of people, seniors particularly, have been much more isolated than what's normal. I would imagine that has had an impact with people's cognitive declines, accelerating that process and that sort of thing. I've seen that with my father as well.

# Dr. Mike Powell:

Yeah. I think we'll know more about that in a couple years when there's something to look back on that's been kept track of, but I've certainly had quite a few conversations with folks, whether I'm seeing them for cognitive related issues, or just patients or even friends who have family members that are going through some things that, boy, about six months into COVID, I could really see some things that maybe we thought were happening really show themselves. When you have issues, whatever those issues are, stressors that push you past that healthy stress tend to make them show themselves more. I remember my mother was doing very, very well and broke her ankle, and man, her cognitive decline over about two weeks. You could just see it change dramatically. I've seen similar things with other folks. Yeah.

# Mike Whitmer:

Yeah. Well, Dr. Powell, thank you so much. I think that we'll go ahead and stop there. This has been fantastic information. Like I said, it's a subject that's important to me. I've learned a ton, and I really appreciate it. Before we go, I'd like to remind our listeners of the resources page on ncmic.com. We've built a library of past webinars out there on a wide variety of topics, so I hope that you check that out. You can also keep up to date on new resources from NCMIC by engaging with us on social media, through Facebook, Twitter, LinkedIn, and Instagram. Also, today's webinar was prerecorded to accommodate schedules, so our listeners have not had the opportunity to ask questions, but if you do have questions that you would like to pose to us, please get in touch with us through ncmic.com, the contact us feature, and that sends us an email, and we can connect you with resources to help with your questions. With that, we'll go ahead and sign off. Thank you, Dr. Powell, for joining us today, and thanks everyone for listening.

# Dr. Mike Powell:

Been a pleasure.