Introduction and Speaker Background

And again, thank you for being part of the MS and Neuroimmune Summit. I'm going to introduce, Ken Sharlin who is a dear friend and colleague. I've known Ken many, many years, almost ten already now, Ken Sharlin, MD, MPH, master's in public health, Institute for Functional Medicine certified practitioner.

He is a board certified neurologist. He's consultant is a functional medicine practitioner. He, is an assistant clinical professor, a researcher, author.

He's also a Wahls Protocol certified practitioner is one of our very first ones that we certified. He has medical degrees from Emory University, the University of Virginia and Vanderbilt.

his functional medicine certification is through the Institute for Functional Medicine. He's the author of the number one bestseller, The Healthy Brain Toolbox Neurologist Proven Strategies to Improve Memory Loss and Protect Your Aging Brain.

And the coauthor of Nourishment the Brain TuneUp food Guide. Dr. Sharlin's a major contributor to reversal of Cognitive Decline 100 patients that can be found in the peer reviewed Journal of Alzheimer's and Parkinson's.

He has been the primary investigator for several pharma based, clinical trials that have helped bring new therapeutics to market. Dr. Sharlin practices general neurology, and I should add functional medicine based neurology.

And they're very few neurologists with his, area of expertise. he is where I send my difficult cases to, and if I have a family member who has any neurologic issues, that's where I go.

so. Ken, welcome. Did I miss anything in your intro? No. Thank you so much. Appreciate it. So let's talk about, MS So when someone's coming in with a variety of symptoms and they're worried and, you know, do I have MS Or not?

What does that diagnostic workup look like? So it's you know, I'm a very traditional neurologist in some respects, and that's what I teach when I'm at the big conferences, asked to, work with other practitioners and help them implement these principles in their practice because it's so easy to skip that medical history.

We have to take a medical history, perform a comprehensive neurological examination, go through a step that's kind of unique to what neurologists do, which is called localization.

We often say, where is the lesion? Where is the problem coming from? And then based on our clinical suspicion, we're going to pick our diagnostic tests.

And of course talk about what tests are specific for Ms.. But it's so important for folks to understand because I very frequently get what I sort of call the you might have them as referrals and we see or we all see them.

and it's sort of stereotyped. So it's no offense and I'd say this at all, but it's always, you know, it's always a younger woman. She has pain, numbness, brain fog, you know, fatigue, a lot of symptoms that affect people commonly very important, but can be very hard to measure objectively.

Right. And the doctor throws up their hands and says, well, you know, I don't know what's going on with you. I've done a whole bunch of tests. Maybe you have MS Right, because you've fit that sort of clinical profile, affecting women more than men, younger people more often than older folks.

But it's important to realize that MS is more than just I feel that it's more than just I'm in pain or, you know, I have fatigue or brain fog, right? So we have to fall back on what it's called the 2017 revised McDonald criteria.

Diagnosing MS and the McDonald Criteria

That is the cornerstone that we all use to make the diagnosis. Right. And what are those, diagnostic criteria? So I have my suspicion. And what are the key diagnostic criteria?

But I'm thinking, okay, this is a probably central nervous system issue, right? So we definitely have to localize to the central nervous system, because if you have numbness, for example, it could be a peripheral nerve problem.

Right? It could be maybe compressed nerve root in your in your low back. And it's you have numbness radiating down your leg. But this numbness which can definitely be part of the MS has to come from either the brain, brainstem or spinal cord.

And let the McDonald criteria tell us at the center, you know, the center piece of that, of that diagnostic criteria is that you must demonstrate, you mean and the neurologist, the physician must demonstrate that there are lesions that are separated by space and by time.

And there are many different ways to accomplish that space and time criteria. And that's all detailed out. We can talk about some of them, but we have to meet that space and time criteria.

So physical space has to be different parts of the central nervous system. Simple as that. Generally we're taught you're talking about at least two of the lesions that don't have to be new.

They don't have to be, you know, enhancing necessarily one should be, perhaps, and then one that is not necessarily enhancing. So you have that if they're you would potentially have the time criteria establishing that one is new and one is old.

Right. then you have to you can kind of mix and match. So if you presented with a measurable objective exacerbation or relapse and then had lesions on your MRI that would meet potentially meet criteria or situations where if you can't establish the time criteria, for example, maybe all the lesions present on the brain MRI are not enhancing, then it is possible to perform a spinal fluid test and demonstrate what are called oligo clonal bands that are unique to the central nervous system, unique to the spinal fluid or the brain, which indicates that there is an immune response that is uniquely going on in the central nervous system.

And with that, you can meet that time criteria. So again, it's not a mystery. There are very objective ways that this gets accomplished, and it's very important that we approach it this way.

Because in particular and I know this is primarily a, you know, a holistic health summit based around the walls protocol. But if we're talking about disease modifying therapy, you certainly don't want to commit someone to a drug when you when you can't confirm the diagnosis.

Correct. So we've confirmed diagnosis. and now, I'm looking at the patient and we're discussing the FDA approved drugs. And hopefully everyone is also getting a discussion about diet and lifestyle.

What are indicators in your clinical practice that the person may have a more aggressive disease or a worse outcome, or that they are more likely to have a really great outcome?

Yeah, well, and it is absolutely true that every person with MS is different and we have to treat each person as a unique individual. This is patient centered medicine, not just disease centered.

Although we have to bring that disease center dialog path toolbox in the room as well. You have to understand the natural history of then this is interesting with Ms..

That well, more women are affected by MS In general, men tend to have a worse prognosis. if perhaps the person has many lesions, many of those, you know, T two or flare and lesions in the brain, and particularly if they're in the brain stem or spinal cord, that tends to portend a worse prognosis.

So those are just a couple of things. So co-morbidities, if you have a lot of heart disease for example diabetes there are other things that are modulators, cigaret smoking, obesity, low levels of vitamin D and so forth.

but being a male, having frequent exacerbations, poor recovery in between spinal cord or brain stem, the those are really, poor signs. Unfortunately. So when you're seeing someone, we're discussing, treatments and I know you do a great job of diet and lifestyle.

how does this guide your discussion regarding the use of, disease modifying treatments or dmcs? You really have to sit down and get to know the patient, right?

You kind of have to get to know where they're coming from. Are they even open to the possibility of using medication now, generally, most people are looking for some guidance.

but occasionally there are a few that come in. Said I absolutely would not even possibly consider disease modifying therapy. And of course I have to support that decision.

But I might inform them that in my opinion, they are at higher risk. I have seen people with a lot of lesions who do quite well and really have largely normal, looking examinations.

So the number of lesions by themselves isn't always necessarily predict how that person is doing, is going to do over time, but it doesn't look good, that's for sure.

You know, everyone who's listening here, I want to reinforce that I have the same type of conversations when people have these multiple risk factors for, more aggressive disease, greater probability of disability.

I, too am encouraging them to take a DMT while we're also doing diet and lifestyle. And they may they often say like, okay, I guess if you're endorsing it, I will, I will do that.

And I let them know that we could still have the goal of getting them off DMT in the future. and of course, I like can I could encourage people to do DMT so they may say, no doc, I'm not.

I'm more afraid of the DMT. and so then we just work really hard on, all of the other modifiable lifestyle factors that, that we can address.

Assessing Prognosis and Disease Severity

it's so important that, you know, Doctor Wells, you've done such a magnificent job of spreading this message, and and people are, you know, extremely, so taken aback by your own personal narrative.

and we're saying we want to emulate you, but we I do have to remind folks that everyone is different. We have each individual person just as who they are, and then that functional medicine in the walls protocol is really slow medicine.

Not not everyone, necessarily, you know, goes from the tilt reclined wheelchair to riding a bike 25 miles and we have to embrace the uniqueness of that person.

But to not embrace those approaches really is throwing a lot away and potentially jeopardizing that person's life, their duration, as well as the quality of their life.

Because all of these things really are medicine, not just the drugs that we prescribe. I mean, I want to point out to everyone, to everyone who's listening, that if I break my leg, and I have broken some bones, I do go see

orthopedics and I get tested.

If I would need surgery, we would do surgery with Jackie. Broke her ankle. She did surgery. And of course, the fact that we do functional medicine meant that we heal more rapidly. But, you know, if I happen to have a acute problem, I am going to see an allopathic medicine and get, the appropriate treatment along with my functional medicine support as well.

So don't don't out of hand. but I automatically reject, the allopathic interventions, use them in conjunction, and then you can decide how that fits in with your care.

And there may be some that are lend themselves better. And again, I'm not recommending one treatment over the other on, on this interview because obviously you have to consider it individually.

But for example, maybe someone might want to look at oak realism AB because what it does for them is it allows them to have a treatment and then they are done for six months.

Right. And they can really work on their functional medicine wall styled approach. And then we can consider whether another round of Oak Ridge is Mab is appropriate.

And then they're done for six months. so that is a possibility. Or if we need to be more aggressive, maybe we look at something like a cell depleting therapy, like bladder being or even clad, because that's sort of a one and done and allows you an opportunity to sort of rebuild your immune system, rebuild your body, address things at the cellular level, and then make a decision, in this case, a year down the line, whether it is even appropriate to repeat it.

So those types of treatments are attractive. But to be clear, in my practice, everyone is treated differently and there are different treatments that are right for different people.

So I do use the other modules I. Ask you to to comment on, Copaxone and the generic equivalents of Copaxone. So I know some of my patients are more comfortable with Copaxone because they feel like it's, a less potent in terms of, fewer side effects than some of these other you're very, very effective drugs that you've just mentioned.

could you talk about Copaxone? What it is and how impactful it is in terms of a potential side effects? Yeah. I mean, Copaxone is one of the older drugs we used to call them the ABC drugs of having that speed up here on Copaxone.

It's a peptide. it's called Vladimir acetate. It's one of the few peptides out there when people use that term that's actually been studied. And large phase three clinical trials and is FDA approved now it is considered a low efficacy drug.

Right. And I personally have issues with low efficacy drugs because I say to my patients, look, if we were having a conversation about your cancer and I was your oncologist and I walked in the room, I could say, well, I'm really sorry to tell you, a breast cancer, I can give you either the low efficacy treatment or the high efficacy treatment.

I mean, you look at me like I was nuts, and yet we have this sort of step therapy idea and then this. But the reality is that we have changed the natural history of M. S.

With and I'm again, we are talking a lot about these drugs. I want to make it clear that I spent a lot of time on the diet and lifestyle part in my clinic, so that's a big part of what we do.

what I do in my team. But, that being said, you know, when you're talking about, slowing disease progression or relapse rate and the sort of the 20 to 30% range compared to drugs that are 60, 70, 80% and actually, in my experience, are generally very well tolerated.

I just don't have many issues with these high efficacy treatment, and it's really hard for me to justify ethically, other

than maybe pregnancy, right, where it appears to be safe.

to, to to not use or not offer these drugs, particularly when there's so many options available. So pregnancy would be the circumstance where you'd feel better.

Treatment Options and Copaxone Discussion

You can see or just know, like I've read over, I read about the drugs and I'm just not, you know, that's really the only one I'm willing to use. But, you know, while people may not, could be at risk for things like progressive multifocal lucho encephalopathy, otherwise called PML, which is most associated with nationalism, Mab, on the other hand, you know, you have to do the original Copaxone.

There's an injection every single day. And then they came out with the high dose three day a week, version 40mg. And now there's like, there's there's pending FDA approval.

in fact, I think the FDA denied approval, but I'm sure it's not going away a Depo version, and I don't really have the details on that, but it would have allowed for much less frequent injections.

And then but people who get subcutaneous fat necrosis, you know, they get injection fatigue and all that. So I'm not not a huge fan, you know really because again, there are so many good options that are really quite well tolerated in general.

Well and well, let's go back to the things that you and I care most about, which is what we can do teach our patients for their, diet and lifestyle. And I know you have, I believe, a five pillar program.

Yeah. Well, clearly the five pillars are really just first identify the problem accurately, because we do get a lot of misdiagnoses or no diagnosis. Right.

and then we're going to investigate those root causes. But that's just information, right? It's hey, you have this low that low. This is not optimal. That's not optimal.

Yeah. The MT4 all that business. And then it's really integrate. So how do you put it together. Now I always say that, you know you and I have written these wonderful books and Barnes and Noble is full of all kinds of great, you know, health and wellness, brain health, Dan and Mark Hyman and all that stuff.

And if everybody just went and read the books and did everything in them, we'd be a really, you know, a really healthy, almost disease free culture. But in reality, the books are really a way to warm up to concepts.

Right? And what really helps and what makes a difference is, is the nurturing the community, the connection that people feel on their journey and the folks that say, hey, I haven't seen you since last October.

December was kind of hard. It was Thanksgiving, it was Christmas, it was New Year's. There was, you know, pumpkin pies or whatever. And I kind of fell off the wagon and, you know, okay, you know, how did you feel?

How did it make you feel? Well, I, I actually felt terrible. And my brain fog was worse and my numbness came back and like, okay, what are your thoughts about that?

Well, next time it's, you know, around Christmas time, I'm going to be a lot more reserved about what I choose to put in my body, even though it's super tempting.

All right. Well, that sounds like a good plan, right? So sometimes you kind of have to fall down to get back up and figure out the direction that you need to go in. So, you know, I think all of that is important, but I do think many people really need that team, really need the support.

It is long term medicine, functional medicine. It's not fix me and undone. Right. It's how are you going to get on the

wagon and stay on it in the long run to change the trajectory of your condition?

okay. So when when you see someone and let's say they have elected to take one of those high efficacy drugs, they're working you through a team on your five pillar approach that so they've done some functional medicine assessments, understand their nutrition, their nutrient levels, their toxin levels, and you've guided them.

Now my next question is they were on the highly effective drugs in the beginning. Are they going to be, you know, can they come off them because. Well, my understanding when you see a conventional neurologist, and we signed up for the high efficacy drugs, I'm also told usually that if I stop those drugs, I should expect a severe rebound.

Right. if I go in these highly effective drugs now, I'm committed the rest of my life. So I think at the core of what you and I both do and in all all fairness to our patients that we treat, that transparency is critical.

And by transparency in this case, I'm talking about measuring and tracking. So that might be tracking those nutrient imbalances, those inflammatory markers, oxidative stress markers, glycemic control, lipid chemistry hormones, which is our fourth pillar of, restoring hormone levels for brain health and for quality of life and function.

All of those are critical. So we can't just, you know, I constantly have to clean up people's supplement list because they come in with bags full of supplements that were sort of chosen based on, I don't know what other than I heard that was good for me.

and sometimes that's true. Well, I, you know, unless people need vitamin D, most people need omega omega threes. most people need a good probiotic. But in the end, we want to measure and we want to track.

And you know, I had, as you know, outside of all of this, been in discussion with a company, called the Active Bioscience that has developed an M. S. disease activity tracker.

So we can look at this in two ways. We want to understand disease activity. And, you know, that's probably the most powerful tool out there because they're Ms.

tracker can predict new lesions or exacerbations within six months of them actually occurring. So the idea. That this is really important. So they have a blood test that I could take.

And if it's abnormal they know from research that it predicts I'm going to have either relapse or new enhancing lesions within the next six months. Right. My describing that accurately.

That's that is accurate. It's powerful information. It integrates things like neuro filament light chain, glial fibular, acidic protein, a variety. Other proteomic measures.

They can integrate 3D volumetric analysis of the brain using their adapted version of neuro client. And it's really it's incredible because if you think about it up to this point, let's say you have Ms..

As I recommend this drug. And if your next question to me was, well, how do we know Doctor Charlene if this drug is working? You and I both know, doctor, was that the answer would be, well, if you have a relapse, if you have disability progression, if you have a new lesion on your MRI, then the drug isn't working.

But that's kind of like installing a fire alarm in your house and asking the technician, how do I know if my fire alarm system is working? And they say, well, if your house burns to the ground, it didn't work right.

That's a very important, concept for all of you, right?

Functional Medicine and the Five-Pillar Approach

We don't in the current world of neurology, I don't have a prospective test to tell me things are going well. I only have an after the fact. Well, things didn't work out, and I had a relapse.

I had damage to my brain. I haven't had seen lesions. I personally like my brain. I would rather not have to wait for part of my brain to be damaged. So I'm going to hand it back to you.

Well, I think, and then you and I know to where I would like to see things go. Is the marriage of this missed disease activity tracking test that looks at all of these individual variables and measures and combines.

This has been well studied, well reported. The major meetings. You can go to the website, read the scientific papers. I know doctor was very hopeful in utilizing their technology in her research.

so we both, you know, strongly support this. But then, you know, when when you have a flare up or increased activity despite being on the drug, does it always also mean that the drug has failed?

You know, I have patients in my clinic today. I went over their labs yesterday. I have one person who has Parkinson's for levels of omega three that fatty acids are almost zero, right?

Compared to her level of arachidonic acid, a pro-inflammatory fatty acid. You know, I mean, if you're in a constant inflammatory state, you know, water is great for putting out a fire, but, you know, you may need more than a bucket.

And so, you know, we have, you know, we have the ability to say potentially maybe it isn't the drug. Here are some other factors that we can also look at and correct.

And then let's go back and look at your mass disease activity scale. I'm going to stop for a moment what I think can you describe is we could use the octave which is proteomics based on proteins, a really great test.

And then the functional medicine test that you and I like that let me measure a lot of nutrient, lifestyle factors that I could address. Right. And I think what you're talking about is mirroring those two sets of information to say you're, you're at risk for disease progression, relapse and your modifiable risk factors.

We could do a lot with because you're a nutritionist so out of whack or you're so toxic that we have to that's the root cause of why the octave tests look a RB, is that what I'm hearing?

I think that's where the money is, so to speak. Literally and figuratively, I really do. I think we can make a huge difference. And we have to move beyond the emotion of, I want, you know, I want to be back the way I was before I had M. S.

I'm just going to adopt this diet and lifestyle program and then go on faith that it's working. No, we need to measure and track, and we need to be disease centered at the same time and be, you know, transparent, realistic.

What is going on here? Are we successfully controlling this disease process while you are adopting that patient centered lifestyle medicine approach? You know, I'm thinking about this instrument, the timelines of the illness.

I can see the MRI that will tell me that there are parts of my brain are being damaged that I may not be able to recognize on physical exam. So the MRI is very helpful.

Before the MRI damage is visible, we can get protein changes that the octave test group can see. So I get a six month of warning that damage is brewing in my brain.

And then if I go even further and do the functional medicine testing that doctor can and I use like soccer practice, we can see the nutritional inadequacies, the toxin levels that are contributing to the why chemistry is not working right in my brain.

Why these proteins are going to become abnormal, why I will develop a relapse or the handsy lesion. So you can think of this as we have years of messed up chemistry that we can count on.

I can measure with functional medicine testing that lead to the proteins not working correctly. So so octave can measure that. That leads to the enhancing lesions.

And what can I are advocating is just imagine if we could do both. We could get the proteins that tell us we're at risk for a relapse from the octave.

And can and I can tell you about your nutritional, your basic chemical processes that you could tune up. What a marvelous tool kit you're describing. Yeah.

You know, how. Do people get that kind of toolkit? So we've got thousands of people listening. They're like, yeah, that's the toolkit I want for my clinical care.

How do I get it? Well, I'd say threefold. You know, first of all, there are not many clinics in the country that are utilizing this test yet. You can get near a filament light chain through lab poor, and it's covered by insurance.

That's just one measure. GFP was supposed to be rolling out this month. Commercially. We were. I was told I haven't been watching for that because we have octave now.

so you could, reach out, I suppose, to the company and say, do you have a list of practitioners who are currently utilizing your tests? This is a very new, very new test.

I can I really only know of, for example, Beth Israel Deaconess, which is a Harvard, part of the Harvard system of mass general. They have fully adopted this.

So this is not I mean, we're we're basically riding the wave with the other cutting edge institutions. And this is not going to be at most neurologist clinics yet.

But of course you can. Of course, they could come see you. And they could come see me. So that is the third option of course. And we've been ordering lots of kits and we love that.

You know, I always get to be fair, I'd love to accommodate everyone. And I want to but I also get a lot of questions about, hey, you know, is there somewhere else I can go, at least for this test?

And we do want to see this test adopted in as many places as possible. So I'm thinking, you could ask your personal medical team, you could ask your neurologist, you could go to the octave website.

They're probably adding practices and practitioners. Go to your website. We'll get to that. at the end. and I'll warn people, I am not, I'm hopefully soon to be a grandmother.

Testing, Monitoring, and Finding Care

And so I am hopefully, not having the private practice anymore because I want to have more grandmother time. so it's going to be your personal neurologist.

and can that will help you with this. And then the functional medicine tests that can and I believe in, and there are a wide variety of, deeper looks at your nutrition, your toxin exposures, I think, and your microbiome, are the three big categories that I like to look at.

what are the big categories that you like to look at? Can, in our brain turn up lab panel? We have several categories that include apolipoprotein status, which has implications not just for, Alzheimer's, but for Ms.

and Parkinson's and ALS. We look at methylation, inflammatory markers, oxidative stress markers, glycemic control. Very important. So looking at that fasting insulin, not just your fasting blood sugar hemoglobin A1 C we do look at lipid chemistry as really a measure of oxidative stress.

Not to put you on Lipitor or anything like that. Hormones are critical especially in with the younger population. And women are still having cycles and younger men will see low testosterone and things like that.

It's important to address what we call the HPA axis, that stress response system, because that plays such a huge role in modulating the immune system toxins, as you mentioned, heavy metals, bio toxins like Lyme disease, herpes simplex virus.

In the case of Ms., looking at Epstein-Barr virus, and then things like, trace minerals that we can do all the full gamut of testing. That's just in our panel presently.

but I often, will also recommend a comprehensive stool analysis as well, because I think it really gives a lot of actionable information. incredibly, incredibly important to look at.

how are cells able to do the chemistry of life? And are we doing it? Well, then we're more likely to have, energy, vitality, mental clarity. when we begin to not do it well, we begin to accumulate a variety of symptoms that can ultimately lead to multiple sclerosis or a variety of comorbid problems.

Once you. And this is going to feel like an overwhelming amount of information to the patient. So, and I know I have to simplify the message, to help people understand that we're going to work at, restoring, more normal biochemical processes.

How often are you checking, a follow up on this is a very comprehensive look at, my my chemistry of life. How often would I get this big, comprehensive look?

So if you're doing our our comprehensive brain tuneup program, we're going to draw your blood at the first month. you won't have those results back immediately.

And but we definitely send you home with lots of stuff to do. but we'll meet that second month, so about four weeks later, go over those labs, identify where those areas of imbalance are and what we're going to do to correct those areas of imbalance.

We continue to work together. And generally at the fourth visit, and they're not necessarily all monthly. So it might be 5 or 6 months into the program, we're going to repeat labs looking at the things that were out of balance.

But now we do have kind of a reboot program for folks. And I suggest that maybe once every 1 to 2 years, consider taking a deep dive and going back and looking at some of those things that had previously been fine, because this really is a dynamic process, and you could have great levels of vitamin D one minute and, you know, a year later you might have low vitamin D levels.

So it is occasionally worth looking at the full picture. Again. So I'll summarize again. Big look at the beginning, a lot of suggestions of how to improve, the things that may have been out of balance.

And of course, addressing the modifiable lifestyle factors and then a recheck, say, in about, 4 to 6 months, seeing where you're at, and then perhaps a recheck every 1 to 2 years.

Once we have things back in what I consider the ideal zone. Right. And I, describe that correctly. and then you're meeting with the team very regularly, and we're tracking things like fatigue.

If you're coming to the office, we're doing a 25ft walk, peg hole test. We're doing a medical symptoms questionnaire. So we're we're tracking things clinically as well.

We do, virtual, but you have to come to Missouri at least once a year once you get practice medicine. So. You know, again, for everyone who's listening, I want you to know that there are very few neurologists in the country, in the world that are trained in functional medicine.

And I think there's only one neurologist I know of that's trained in the Wahls protocol. And that's, of course, Ken. And when in my clinical practice, I saw someone who was little more complicated there really, a little more seriously disabled.

I sent them to Ken And if I have a family member who has a neurologic issue, I'm sending them to Ken and if I develop a neurologic issue side my MsS Which is a good control.

Ken's the man I would go see, so I can't recommend him highly enough. I, think the world of him and his team. Ken, where do people find you? our main website for the neurology clinic and functional medicine.

Is at functionalmedicine.doctor And we've actually just, updated our website. It's a brand new website, same URL, but brand new website. And there you can register to have a complimentary, consult with one of my coordinators.

Usually it's Kaylee, and, she's very bright and capable and also well certified. And she's going to help you sort through the menu of options, really understand the narrative, what you're going through, what you're trying to accomplish, and make some recommendations to, to to make sure ultimately that the match that we're offering you, what services make the most sense is a good match.

So the consult is not a visit with you or a clinician. The counsel is understanding your symptoms, your goals, and whether or not your practice is the, best place to address those issues.

And we have a number of options. So how can we best serve you? many times people do want to visit me, with me before they make that full commitment, because there is an out-of-pocket costs for functional medicine, not just in my clinic, but in most places.

and so we do sometimes what we call a meet and greet, and usually once people have met me by way of telemedicine, they're making plans to come down and see me.

Okay, well, Ken, this is marvelous. I look forward to coming down and, seeing you and your family and going for another, lovely bike ride. I am too. I'm counting on it.