CAN DO MULTIPLE SCLEROSIS | PODCAST

# *Progressive MS Research Update*

Episode 167 – Podcast Transcript

[(0:23)] Stephanie Buxhoeveden: Welcome to the Can Do MS podcast. I'm your host, Stephanie Den[?]. I live with MS, and I'm also a clinician and MS researcher. This is episode number 167, and today we're excited to welcome our guest, Dr. Bruce Bebo. He's the Executive Vice President of Research for the National MS Society. Welcome, Bruce. We're so happy to have you here tonight.

[(0:44)] Bruce Bebo: Thanks, Stephanie. Good to be with you.

[(0:46)] Stephanie: Yeah. And today we're going to talk about some current and future research specifically for progressive MS, but I really want our audience to know a little bit more about you, and can you tell us how you got into MS Research?

[(0:58)] Bruce: Sure. I was inspired to pursue a career in MS research by my mother, who was diagnosed with MS when I was a teenager. Um, and my mom, um, was diagnosed with progressive MS. Um, she, uh, proceeded, uh, rapidly from, you know, just having a little trouble walking to needing a cane to crutches, to eventually being in a wheelchair. And this was at a time where there were no disease modifying therapies and certainly, um, uh, nothing we could offer people with relapsing MS and certainly nothing we could offer people for progressive MS. And I just found that, uh, the situation was unacceptable. So that was, uh, sort of a turning point for me. And I decided I was already a microbiology major, and I, I was already pretty interested in immunology. And, uh, that all kind of came together. Uh, and I, it's an, actually, an interesting quick story, Stephanie.

I, um, my mom was very active with the MS Society chapter in our hometown, which was Phoenix, Arizona. And I, so I had awareness of the society, and I actually wrote a letter to the National Multiple Sclerosis Society, to whom it may concern, New York, New York. Uh, hey, I'm this kid in Arizona's, mom lives with MS, I want to go to graduate school. Uh, do you have any advice or help? And the person whose job I actually have now, uh, at the time wrote me a letter back. Uh, an encouraging letter included a copy of the annual report of the MS Society that listed grants and that they were, um, funding around the country. And that was the resource I used to find the lab that I did my PhD studies in. Um, so that, and, and it, that led ultimately to a postdoctoral fellowship, um, in Portland, Oregon where I live now. Uh, that was, um, sponsored by the National MS Society, a few other experiences. Um, and for the last, gosh, now 12 years, I've led the research function of the National MS Society.

[(3:06)] Stephanie: That's such an awesome full circle story. And similar, I was thinking about going

into research. I remember having a conversation with you saying, you know, I'm an MS patient, I'm a clinician, but I really want to do research and, and you being there for me and guiding me through that. So it's very awesome that you went from being the person with a glint in the eye to now being in the position to really have a huge impact, especially for progressive MS patients, because as you know, there, we have come a long way in relapsing MS, but there are still a lot of challenges that we face in progressive MS and often my patients, and I know your mom probably felt a little left behind. Is there anything that you can think of that makes progressive MS so difficult to research and to treat?

[(3:59)] Bruce: Yeah, so I, I, um, I'm sympathetic to that frustration. You know, my mom, uh, was around during this, let's say, golden era that we're living in now of disease modifying therapies for, particularly for relapsing forms of MS. So she, uh, watched all those, um, those terrific medications that have changed a life for so many people with ms, but she watched them and celebrated them, um, but always felt a little left behind because there weren't any terrific, amazing new announcements for people living with progressive forms of MS. And so, um, you know, I see, uh, I see that changing. Uh, I, uh, and I also want to make sure people know that, um, you know, it wasn't due to a lack of effort. It wasn't due to a lack of interest, or it wasn't that we didn't hear you. Uh, we have made tremendous investments in trying to better understand what's driving progression, uh, and, uh, it is just a harder form of MS to solve.

And, uh, but we, we are, I think, getting insights and we are getting closer to translating those insights into therapies for people with progressive MS. Um, and, and perhaps, um, let[?] me start at the beginning a little that, uh, we're, we're now realizing that, um, MS, the, the processes driving relapses and the processes driving progression are distinct, but probably happening in parallel for most of a person's experience with MS. And it, and it, it depends, and we don't know all of the, the variables, but it, it depends on which of those processes is dominating at any particular time, what form or stage of MS that you are presenting with in that particular moment in time. So my mom probably had subclinical disease activity lesions in her nervous system, and her brain and her spinal cord that happened probably to hit areas that didn't result in any symptoms that she noticed.

Uh, uh, and that probably went on for years. And then ultimately, the more progressive, um, uh, uh, processes started to, uh, take hold and started to dominate. And she was diagnosed with progressive MS, but I think it's highly likely that she and others that are diagnosed with progressive MS probably had subclinical inflammation happening before they were diagnosed with progressive MS. And then, as we've talked about before, Stephanie, what happens in the kind of natural history of MS is as we age, that inflammatory process tends to, uh, wax and, uh, and, and, and, uh, it subside and it allows that progressive process to dominate. And, and, and so we see more progressive MS in people who are older and that, and that would be what we've kind of called secondary progressive MS. Um, but, and I think in the future we're going to, um, probably think of MS more as stages rather than, than separate conditions that are relapsing and progressive.

But that, that wasn't really your question. Your question was why, um, has progressive MS been so much harder to understand and to treat? And there are several reasons. One, um, the processes are taking place all inside of the nervous system, right? So the, the, the relapsing forms of MS, the immune system that's causing that, it, you know, starts in the periphery, starts in the blood and the lymphoid organs and things, and migrates to the nervous system. And we can look in the blood

and look in the lymph nodes, and we can measure differences in people with MS versus, um, uh, people without MS and, and get a, a sense for that. And the drugs that we have, you know, can treat the immune system while it's circulating in the blood. What's, the processes that are driving progressive MS are compartmentalized into[?] the nervous system. They're behind what we call the blood-brain barrier, which is this protective barrier of the nervous system.

And so it's hard to study, right? Because it's behind this wall that's behind the blood-brain barrier in the nervous system. Uh, so it's much harder to study, uh, and, um, and it's much harder to treat because, uh, whatever treatments we develop, they need to get access to the nervous system, and they need to get access to the nervous system, but not harm the nervous system at the same time. So, um, that's one challenge. I think the other challenge is measuring it, right? So progression, um, often takes a long time for, you know, to evolve, right? That disability that can, uh, can occur. And progressive MS takes years oftentimes to manifest itself. And that is, um, measuring that clinical, um, progression, uh, is very difficult to do in the kind of timeframe you need to do it in for a clinical trial. And so I, I think that's changing.

Um, I think we're starting to appreciate that there's some, um, imaging, some MRI measures we might be able to use that could, um, maybe be a marker for, uh, progression and for response to therapies to progression. Um, we're certainly appreciating more and more what cells and processes are involved in this compartmentalized, um, uh, uh, pathways that are driving progression. Uh, and I, um, and, and I know you'll ask some more questions about that. So I'll, I'll stop here for a minute, but I, I just share that I'm more optimistic than I ever have been that we're on the cusp of finding something that'll be effective for people living with progressive MS.

[(9:54)] Stephanie: Yeah, absolutely. And I know that was often something patients ask me is, do I have relapsing MS or do I have progressive MS? And there's no test. We can't do a scan and say, okay, you have progressive MS. Because like you said, both inflammation and progression happen in tandem. It's more of a diagnosis of looking back and seeing over the last couple of years how you've either stayed stable or have seen these kind of slow changes, right? So it might be two years ago you could walk a mile without sweating it, and then now we're only making it down the block, and there was no relapse in there. But over time, we're seeing a little bit of creep of disease and disability. So what projects are currently going on and how are they trying to overcome these challenges that you just mentioned?

[(10:48)] Bruce: Right. So, uh, I think this concept of compartmentalized, um, inflammation, compartmentalized immune reactivity is an emerging one. Um, we're understanding, uh, and of course when I say we, Stephanie, I'm referring to the royal we, uh, this is the MS sort of research movement, not me personally, but, uh, we're starting to understand, um, the cells, uh, that are involved and the kind of communication pathways that are involved. There are, um, cells within our nervous system, um, called microglia cells that are, are immune cell in the nervous system. I mean, we need immune protection of our nervous system from viruses and parasites and bacteria and things. And these are cells that are resident within your essential nervous system that are there to protect you from, uh, infections. But, uh, they seem to be malfunctioning in progressive MS. Um, they are, uh, and, and it's complicated. And this is, you know, um, a part of the challenge is that these microglial cells, we need them.

They, they, they help clean up, for example, the myelin debris and create an environment that's conducive to repair, for example. Uh, but when they're dysregulated, they're sort of overreacting

and they're contributing to the, some inflammation and some other, um, pathways that are, um, accelerating neurodegeneration. So it's, it's not as easy as let's just get rid of these cells because, um, because we need them. Uh, we need their beneficial properties, but we, we want to, we want to enhance the beneficial properties and minimize the, the negative properties. And we're learning a lot, uh, uh, about, um, how to identify when they're, um, damaging and when they're protecting and the molecules and pathways they're, um, using to, uh, to deliver that either helpful or harmful, um, uh, reaction. And, uh, leveraging that knowledge into, potentially into therapies that could again, either promote the healthy, um, activities of those cells or inhibit the unhealthy activities of those cells.

So, and that's been facilitated.[inaudible] my observation in science, you know, in advances in MS and other conditions often happens when there are big advances in technology that allow us to look at a problem a little bit differently. There've been some real technological advances that have allowed us to examine those microglial cells in a very detailed molecular way, and are starting to tease apart some of those pathways. Again, those, some of them that promote repair and, and, and protection, and some that are contributing to, um, the, the neurodegeneration. So that's one, I'd say real, uh, positive, interesting area. And then all the cells they interact with, they interact with astrocytes, these, uh, uh, star shaped cells that, um, also have a role in MS. They're interacting with neurons, they interact with other immune cells. So, uh, understanding all those pathways that, that sort of, I'd say advances in technology are allowing us to tease apart all those networks and all those, um, uh, aspects of that communication.

And, and, and we're starting to translate that knowledge into treatments that are being tested, uh, for progressive MS. Um, and so I, I think the[?], another major advance is, as I mentioned a little bit earlier, is in imaging. And we're starting to be able to, um, uh, image, uh, use MRI to, uh, measure, um, uh, some biological processes that we think are driving progression. So one of the things we, um, we, we think is happening in progressive MS is, you know, you have a, let's say you have a lesion that you get from a relapse, and it resolves, but it kind of still sits there and it kind of is still sort of cooking kind of slowly. Uh, they develop what's called an iron rim around the outside of the lesion. This isn't like a leading, think of it like a forest fire a little bit.

And, and this is the leading edge of the fire. And it, and those microglial cells that I mentioned before are on the edge and they're actually contributing to the damage, and they pick up iron from dead cells. And that iron we can see on an MRI scan. So we can see these lesions that have this dark rim around them, and they're called iron rim lesions. And we think those are lesions that are contributing to progression. So now we have, maybe have something we can measure. So if we have a treatment that we think is affecting those microglial cells in a way that we think would be beneficial to progressive MS, maybe we can keep an eye on those iron rim lesions to see if they're resolving with that treatment. It might be, it might be the progressive MS version of gadolinium enhancing lesion for relapsing MS.

Uh, uh, not clear yet, but, and there, there's some other, uh, people are looking at measuring that brain shrinkage or atrophy as a measure of progression. So, uh, always, I always say, uh, when I'm giving a talk to people, that I've got bad news for all of us, that all our brains are shrinking. Uh, and, but if you live with MS on average, on a population basis, the people's brains are shrinking just a little bit faster. And we can measure that rate of brain shrinkage or brain atrophy in people with MS versus, uh, people without MS. And we can see that the rate is a little bit faster. Stephanie, it's not ready to use, like, as a diagnostic or to be able to monitor therapy in an individual person.

We're talking kind of like trends in large groups of people. But, um, but we see that, um, people with progressive MS, their brains are atrophying a little bit faster.

We can measure it, we can measure the rate of it. And then we have seen some treatments, experimental treatments in early phase clinical trials for that, uh, for progressive MS that have shown to be able to significantly lower that rate of brain atrophy. And we we're confident that that atrophy leads to, um, you know, disability, uh, uh, in the future. So we think that an agent that can slow that atrophy down probably has benefits for people with progressive ms. So there's a number of clinical trials, ongoing testing, different, uh, approaches. Um, and some of 'em that people have maybe heard of, of simvastatin has been shown to reduce brain atrophy by about 40%. Uh, uh, [inaudible] was another trial, so a few years ago that showed a slowdown in brain atrophy. Um, there, there's a, a, uh, a lipoic acid that's been shown to slow down brain atrophy. And so those are all among others, good candidates for us to test in a, in a trial to look at a clinical benefits for those agents.

[(17:40)] Stephanie: Yeah. And of course, simvastatin being a cholesterol drug, something that's very common and widely used, and we have that ability to go to existing therapies and think about how they could help off-label for MS.

[(17:53)] Bruce: Yeah.

[(17:54)] Stephanie: And it's interesting, especially this brain atrophy, being able to measure it on an MRI scan. because as you said, we're all atrophying. Unfortunately, that's part of aging. We haven't been able to measure it. Well, it's hard to measure, right? Because if you're dehydrated, if you had a glass of wine the night before, um, these things can make it difficult on an MRI scanner to really compare scan to scan, um, your brain volume. But the fact that we're now able to do that is huge. And hopefully it will show that many of our current treatments are also working on that. But that's something we don't know. We know our therapies work well for inflammation, but, but maybe not so much for neurodegeneration.

[(18:35)] Bruce: It also makes me think a little bit, Stephanie, about maybe talking about biomarkers briefly, um, because, you know, there are some emerging blood biomarkers that might be able to tell us something about progressive MS. Maybe your listeners have heard about Neurofilament light chain. I think it's ironic that its acronym is NFL. because these guys that are out there busting their heads on Sundays are probably, if you measured NFL in their blood after the, a football game, it would probably be elevated. But this is, this is a, a neurofilament light chain. It's a structural protein that that's kind of in your nerve fibers. And when your nerve fibers get damaged, that structural protein gets released. And again, this was a technological advance. We could measure it for a long time in this cerebral spinal fluid. But just in the last few years, the technology be able to measure this in the blood has emerged and accurately measure it.

And, uh, and so it, it's not specific to MS, but it, it does measure when your nervous system's damaged and if there's not another reason for it to be damaged, then what the, the, the signal you're seeing is related to, to MS. And so it goes up and down with relapses. It definitely goes up and down, um, in, uh, with treatment, particularly in relapsing MS. Um, we haven't quite been able to translate that NFL signal yet to progressive MS because it's probably there, but it's probably much lower changes than you see with relapsing MS and a little hard to tease apart. But there are some emerging, uh, biomarkers that we think could, um, uh, uh, be used in addition to

neurofilament light chain. One of them is called glial of fibrillary acidic protein, or GFAP. Um, that I, I think where we're going is there may be a ratio of NFL to GFAP that might help, let's say, for example, diagnose somebody in progressive MS might be a, a blood marker that could be, you know, help, help us measure progression and help us measure response to therapy. So in addition to MRIs, I think we're starting to feel like we might be able to use a, it's not ready yet. So just to be clear, but I think we're, we're getting closer to maybe being able to have some blood markers in addition to imaging markers that may probably be used in combination, um, as endpoints and trials. And hopefully one day when we have a treatment, maybe as a way to monitor the, um, the progress of that treatment in an individual person.

[(21:03)] Stephanie: Yes. And that is so exciting to me as a person with MS, because I would love to be able to, with a blood draw, see if I'm at risk for going on to have a relapse or a new lesion, rather than sitting around and waiting for the relapse with a new lesion to occur. because that's brain damage, right? And by the time it's occurred, it's happened and we're just reacting to it. But if we had some sort of flag saying something bad is coming soon and had that window of opportunity to act, that could be incredibly meaningful.

[(21:36)] Bruce: Agreed. And I, I mean, just quickly, it's not so much as relevant to progressive MS, but I think, uh, we may be able to use these blood biomarkers, uh, a family history, a, a clinical, um, sort of evaluation to predict who might be at high risk for developing MS and, uh, and, and, and start to use either blood biomarkers and or imaging to, uh, diagnose people even before they have clinical symptoms of MS and, and be able to treat people as, as you well know, and probably a lot of your listeners know, the earlier you get on an effective disease modifying therapy, the better your outcome's going to be. So imagine what we could do if we could start treating people before they even had any clinical disease. I mean, uh, and we may be able to prevent MS, uh, we certainly could, um, slow down and significantly delay likely that that[?] progression, um, so that gets us back to the progression topic, but I, I, I think those biomarkers and advances in imaging and even artificial intelligence that, um, have identified patterns in healthcare utilization and people that went on three to five years later to develop MS and have noticed specific patterns that maybe we could use to screen, um, people in a healthcare system for being at risk for MS and catching it before it even starts and stopping progression before it even gets going. So I'm, I'm excited about that possibility too.

[(23:10)] Stephanie: I'd be willing to bet your mom would be very excited about that.

[(23:13)] Bruce: Yeah.

[(23:13)] Stephanie: And probably would've brought you to the doctor the second that test was available. And a lot of our listeners with children will probably find a lot of hope in that as well.

[(23:22)] Bruce: Yeah, agreed.

[(23:24)] Stephanie: So the, the way that we look at clinical trials, it's usually we're measuring annualized relapse rate. That tends to be the primary endpoint for all these drug trials, which doesn't work for progressive MS for a few reasons. They're not relapsing, the disease is progressing very slowly. So you'd really have to do a very long clinical trial, It'd take forever to bring things to market. How are some of the current trials, sort of thinking outside of the box and doing things a little bit differently to address progressive MS specifically?

[(23:55)] Bruce: Yeah, so I think, um, you know, we mentioned a little bit of some of the agents that have been in that intermediate phase trial, that phase two trial. So I think what the innovation that's happening at that phase, at that stage of development is the, is the measurement that, uh, um, sort of developments that I mentioned already, the imaging, the biomarkers, being able to measure response to therapy and identifying quickly which agents have promise for later stage development. So we kind of covered that topic already. Um, but as far as later stage developments, Stephanie, the outcome for those trials is always going to be a clinical outcome. The, the, the, the FDA is, um, uh, uh, only going to approve treatments if there's a measurable clinical benefit for those treatments. So, uh, um, uh, it, it will come down still to this, uh, enhanced disability status scale, this EDSS measurement, uh, for the time being until we have something better to replace it.

Um, what I think you're getting at is some innovation and trial design to try to speed things up. Um, I think the standard way of doing these is you got an agent, you, you, um, whether it might be repurposed or repositioned or a new agent that you think might have a benefit for MS, and you test it in a phase two trial and you get a good signal, and then you go to phase three and it doesn't work and you start all over again. And, um, doing them, um, you know, incrementally like that, it just takes a long time. I think that what we're, we're in this era of innovation, we've learned a lot of this from, I think from other conditions, other diseases, uh, about running multiple trials in parallel and using the same group of individuals as the control group or the placebo group.

So, um, this sort of multi-arm, multi-stage trial is called where you have, uh, and, and the, in this case, the placebo or control group is standard of care because there are treatments that people are using and there, and whether again, pharmacological or rehab or other, whatever the standard of care is that that control group of people stays on standard of care therapy. And then you bring in arms of the trial testing different agents that you, uh, that have promise for progressive MS and you monitor, you could do, uh, uh, uh, whatever resources you have to apply. You can do as many arms as you want at any particular time, but that it, it that you learn. And during the course of the trial, um, you'll monitor treatment on one arm at some point, statistically, you either say, Hey, this worked, or you say statistically, oh, nope, didn't work, let's move on to the next thing.

And then you add an arm to the trial with the next treatment. And so you're not start, you're not one building the infrastructure for a trial all over again. That's so time consuming. Um, there's lots of paperwork and lot, and just to set up the infrastructure can take years. So you're not setting it up every time, brand new. Um, you're keeping the control arm, uh, constant through, and you can keep adding these experimental arms as resources and, and knowledge evolve. So, um, an example of a trial like that, uh, that is ongoing as we speak, is called octopus, which is kind of a cool name because it's very illustrative, right? That, that I mentioned arms. So, you know, you can have as many arms, uh, hopefully you, maybe one day even have more than an octopus. But, uh, it, it, I think it's an illustrative name for this study.

It is, uh, that the, the, um, studies, you know, taking place in, uh, in, in England, but it has sites all over all, all over the UK. And now, um, it was just actually in Australia a few weeks ago where, uh, they announced a, uh, related study called Platypus. Uh, and a platypus only [inaudible] only has forearms, but, um, but it is a, um, companion study to Octopus. And the, in Australia will add additional arms, uh, from, uh, hospitals and research centers in Australia that will add power, uh,

will shorten the amount of time it takes to determine whether treatment is working or not working by adding more people and more arms and more, more statistical power. Uh, so, uh, so those are the really, the, they're not the first, but they're, uh, they're some of the first multi-arm, multi-stage clinical trials for MS that we've ever had. And, um, pretty, and, and, and it's the mission of this work is to test agents for progressive MS. This is not for relapsing MS, it's solely for progressive MS.

[(28:41)] Stephanie: That gives me so much hope, because not only is it an awesome trial design, I just envision this octopus and trying to find all the, all the answers to all these big questions. But the spirit of collaboration and researchers and scientists and people from the MS Society patients have been so involved in this effort. And I was lucky enough to join one of the progressive MS Alliance Scientific conferences this year, and to see people from all over the globe coming together, collaborating, sharing their work with each other, instead of kind of keeping it, hoarding it as sometimes academics can tend to do, because they're, they're thinking more about their own careers than about the, the populations they're trying to help, but that it couldn't be farther from the truth, right? So there's this huge alliance of people coming together and so engaged, and I commend that. And if you want to say a few words about the international progressive MS Alliance.

[(29:40)] Bruce: Yeah, I think, I think it's a great, great observation, Stephanie. I, I, I've seen that evolution in my, um, now several decades in MS research. Uh, um, you know, we, it is a tight knit, uh, collegial community for the most part of people all, um, really putting people with MS at the center of, of all of the work that we do. Uh, I think that is a, a tremendous spirit that, that MS, that movement, the scientific movement has. Um, and, uh, so I'm, I'm, I, I, uh, I, I'm proud of that. You mentioned the international progressive MS Alliances, that's, this is a, uh, uh, an iteration of this collaboration. Uh, some, gosh, now maybe close to 10 years now. Um, uh, uh, I think we all were frustrated by the lack of progress in progressive MS. Again, not for lack of trying and not for lack of investment, but we're missing something.

And, uh, so, uh, several, again, almost now, 10 years ago, uh, the sort of thought leaders from around the world gathered and said, what could we do to accelerate progress? What could we do to change the landscape for progressive MS? And that was the, the, uh, sort of birth of the international Progressive MS Alliance. And this is a, uh, a alliance of, of, um, a number of global MS organizations, uh, that the managing members, the members that, uh, contribute significantly financially and, and, uh, uh, and, and staff include the US MS Society, the MS Society of Canada, Italy, the UK, Australia and, and, and Multiple Sclerosis International Federation and many others are, are pooled resources. Um, and developed a strategic plan and identified the high impact questions to answer. And, and we're coordinating and leveraging our, our investments in, um, unprecedented ways that, uh, can only accelerate our progress.

We're not all working in parallel. We're working together now in a coordinated way. And I, I think what's, so that's exciting for progressive MS. Um, perhaps I'll mention one other thing that, um, you know, this trust and confidence and experience that we've built by working together in the alliance, uh, um, is translating to even more global collaboration, more global alignment. Uh, we, um, I think you'll remember developed this Pathways to Cures research roadmap some years ago, and we have 30 MS organizations from around the world that have endorsed this roadmap to cures for MS. Um, and we just had a meeting in New York where we had 200 people from around the world, from, gosh, I think it was 14 or 15 different countries that all came together to update that pathways to cures roadmap and refine it, and even develop even more ways for us to work closely together

to collaborate, to leverage each other's investments to, for, with the sole purpose of accelerating progress, um, um, particularly in, in progressive MS. So, um, there now organization, Stephanie that like, uh, other MS societies around the world that had never funded research outside of their borders before, are now funding research out of their borders. We just did a landscape, this is, um, uh, not published yet, and I think I can share that kind of high level conclusion. One, one of which was that, um, there's research, uh, in MS in general happening in 39 different countries around the world.

[(33:24)] Stephanie: That's incredible.

[(33:25)] Bruce: So it is really incredible. Um, so I, I think there's a lot to be optimistic about.

[(33:31)] Stephanie: Yes. And I hope that everyone listening tonight, if they did feel left behind or like nobody was really rooting for them, hearing you speak knows that that couldn't be farther from the truth. And so I think that's awesome. However, all of these things are coming in the future, right on the horizon gives us a lot of hope for what will be one day. Uh, but what can people with, living with progressive MS do today? Like how impactful can lifestyle and wellness actually be?

[(34:05)] Bruce: Uh, well, I think, uh, I think lifestyle and wellness activities, um, progressive MS or relapsing MS can be incredibly impactful. Um, we, uh, there's emerging research on the benefits of exercise, uh, in, um, in slowing down neurodegeneration, uh, in, uh, uh, uh, you know, in having direct effects in the nervous system. Uh, we know this from the stroke field that, uh, that if you, uh, have this, that people are exercising that, um, sort of the rehabilitation after stroke is much more robust. And, and, um, and there's likely, I mean, I'm a, a biology person. There's likely like soluble factors that are getting released as a consequence of exercise that are promoting repair. We, we know this, we can put mice on a treadmill and we can measure repair in mice, and we know it accelerates faster when people, when they're exercised. So, um, and there's almost, and I appreciate that, you know, people may have different levels of ability and ability to exercise.

There's almost always something Stephanie, a person can do no matter what their, uh, where they are in their journey with MS, there's almost always something they can do to, um, to, um, benefit their, uh, their health and slow down, uh, progression. Um, I think another aspect of wellness and diet is related to reducing the risk for comorbidities. So we, what we do know is if you have MS and you get type two diabetes, or you get cardiovascular disease or hyperlipidemia or something, you layer something on top of MS, it tends to accelerate progression. So one of the benefits I, I, I feel quite sure of is by having a healthy lifestyle, by having a healthy diet, by exercising, by taking advantage of whatever rehab, um, you know, uh, uh, benefit you may have that, um, that one of the ways that's helping is by reducing a person's risk for other comorbid or other health conditions that might layer on top of their MS and accelerate that progression.

I've seen it personally, that's happened to my mom. She had other health stuff that layered on top of her MS and dramatically accelerated her progression. So I, I know, uh, if, you know, one of the main benefits of, of a healthy diet and, and wellness and, you know, sleep and all of those things is to reduce the risk for comorbidities and, and slow down the, the progression of MS. I don't, we, we have supported research in specific diets. Um, I, my, my, uh, bias, my thinking around that is, um, that I think any healthy diet, um, is going to have benefits for people. Um, it has to be a diet you have, you can stick to, um, and be consistent with. Um, most neurologists will recommend a Mediterranean diet or something along those lines. I, I think as long as it's healthy, balanced, and

you can stick to it, uh, that I, I think there, there are tremendous benefits, uh, uh, for people with progressive MS from a, a, a, a health, uh, wellness and lifestyle point of view. Um, and, and [inaudible] layering that on top of some pharmacological or cell-based, uh, therapy. I mean, I, I, you know, that, that additional benefits. So just because someone might be on a disease modifying therapy, I guess what I'm getting at, if you are with relapsing disease and you're taking your drug, that doesn't give you permission not live a healthy lifestyle, right? Like, I think you'll get extra benefit from a pharmacological approach by adding wellness and diet to, to your regime.

[(37:52)] Stephanie: Yes, we always say in neurology, treat the body right and the brain will follow. And that has proven true time and time again. With all of that that you just said in mind, January's a great time to set some wellness goals, and I know we've all probably done it. And if you want help sticking to those goals or making some wellness goals, we will put some links in the description of this podcast to webinars and resources that we've done here at Can do MS to help you do just that. Thank you so much for joining us today, Bruce. It's always really great to have a research update and to hear what's going on. I hope that the people listening have a lot of hope and optimism for the future and would like to thank you for everything that you do for us.

[(38:39)] Bruce: Awesome to be on with you. And, um, you guys do great work. It's great to be partners. Um, and, and thanks again.

[(38:47)] Stephanie: Thank you. Thank you for listening to this episode of the Can Do MS podcast. If you'd liked this episode, please leave us a rating and review on Apple Podcasts or Spotify. We really appreciate your feedback. Check out the description of this episode. For links to the Can do MS resources and programs we mentioned, or visit our website@cando-ms.org. Lastly, we'd like to thank all our generous sponsors for their support of this episode of the Can Do MS podcast. Until next time, be well and have a great day.

[END]

This podcast is possible thanks to the generous support of the following sponsors:

EMD SERONO