

Soania Mathur: Thank you everyone for joining us for today's Third Thursday webinar, Medical Marijuana and Alternative Therapies. I'm Dr. Soania Mathur, a family physician, a Parkinson's patient for over 20 years now, and co-chair of The Michael J. Fox Foundation Patient Council. I also have the pleasure of being a moderator today.

We will be covering topics today that are of really great interest to our community and create a lot of buzz, and that's the latest on medical marijuana and Parkinson's disease, as well as other alternative therapies such as acupuncture and supplements. And throughout our discussion today you, the audience, are able to submit questions which our panel will try and answer later in our presentation. How you do this is, you should see a Q and A box, the middle of your screen. Type your questions there and we'll really, we'll do our best to get to as many as we can.

Also we're providing the slides from today's webinar for download. You should see a box called Resource List below the Q and A box. Just double click on the document you want. In this case it would be Webinar slides. And it should open up in another browser window and you can purchase it from there. Next slide please.

Let's meet our panelists. Matt Ackerman is calling from California. Matt was diagnosed with Parkinson's in 2010 and is a really vocal and wonderful member of our Patient Council. Thank you for joining us, Matt.

Matt Ackerman: Thank you for having me.

Soania Mathur: And also with us is Dr. Susan Fox. Dr. Fox is Director of the Division of Neurology, actually quite near me at the University of Toronto. She's researching cannabis oil for pain in Parkinson's disease. So glad you're here with us. Dr. Fox.

Susan Fox: Thank you for inviting me. Good morning everybody.

Soania Mathur: Morning. Also with us today is Dr. Benzi Kluger. He's a professor in the Department of Neurology at the University of Colorado. He's interested in the non-motor symptoms of Parkinson's, such as fatigue and cognitive impairment, and complementary therapies. Thank you for calling in, Dr. Kluger.

Benzi Kluger: Thank you.

Soania Mathur: And last, we'll welcome Dr. Helen Lavretsky, A professor of psychiatry at UCLA and geriatric psychiatrist. She studies mind body treatments such as yoga and Tai Chi for mood and cognitive disorders. Really happy to have you here with us today. Dr. Lavretsky.

Helen Lavretsky: Thank you very much.

Soania Mathur: Welcome everyone. Let's start with the next slide. So let's, you know, not hesitate and get started. Let's start with defining what we're talking about today in this webinar, as I mentioned, we're discussing use of medical marijuana and other alternative therapies in the management of Parkinson's disease. Dr. Kluger, could you perhaps start the discussion off for us by explaining what is meant by complementary therapies and how that sort of fits into the practice of integrative medicine?

Benzi Kluger: Oh sure. So complementary and alternative medicine. We kind of moved to the term complementary to emphasize that these are things that should be done alongside with or in addition to other treatments. But it's basically, in a nutshell, anything that your regular doctor would not prescribe for you or order for you. So that could include things ranging from diet, certain exercises outside of traditional physical therapy, supplements, herbs. We'll talk about medical marijuana today, which would definitely fall under that heading. And yeah, and there's I think increasing interest in that in our country, particularly over the last couple of decades that people are recognizing that there may be something there. Although in a lot of cases, as I'm sure we'll discuss today too, the evidence may be somewhat limited.

Soania Mathur: Right, and I think you're right, Dr. Kluger. I think that this sort of team approach and looking at all sorts of treatments that might be available for patients really helps improve quality of life. Let's move on to the next slide if we can.

We're going to talk about the first complementary treatment as you mentioned, the discussion about medical marijuana. Matt, I'm sure you'd agree that the use of cannabis to help control a variety of Parkinson's symptoms is really of great interest to lots of people in our community, and there's a ton of sort of anecdotal reports of the success and benefits. Lots of videos, lots of top chat in forums. Before we get into how it may be an alternative therapy in Parkinson's care, at which point I really will circle back to you, Matt, to get your personal take. I'm interested in hearing that. I'd like to start off with what we know from a scientific perspective. Dr. Fox, many of our listeners have heard that there are different types of marijuana. When we refer to medical marijuana. What are the active compounds that we are interested in?

Susan Fox: Yes, this is obviously a very important point that cannabis is a mixture of different compounds, and people who smoke or inhale cannabis, they're having a variety of constituents that they're ingesting, and we don't perhaps know all of the different types. The ones that most people have heard of are THC, which is the so-called psychoactive component that can cause sort of the psychosis or the high feeling.

The other common one is called CBD, which may have other properties, but cannabis, the herbal cannabis. Contains probably over a hundred pharmacological constituents. There were other types of cannabis that have been investigated in Parkinson's using pharmacological grade or very potent cannabis products and these are called nabilone and dronabinol, and these are

drugs that have been licensed by agencies for specific indications. So this is a very different type of cannabis, but it still comes under the thought, the use of cannabis in Parkinson's disease.

Obviously what we're probably focusing on more today is the sort of herbal per properties of cannabis. Then there are other compounds that are now available. Cannabis oils, which are a mixture, often have THC and CBD. So there's a whole variety of types of cannabis out there. And I think sometimes this can be overwhelming to people when they try and approach the field to know what they're using, what they're taking, what they're being, what they're potentially trying as to whether it's going to have a benefit or not.

Soania Mathur: So when a patient goes to be prescribed medical marijuana, it could be any of these compounds that are found in the medication that will be prescribed? Dr. Fox?

Susan Fox: Yeah. So, it'll depend on where they're going to get this from. The herbal types of cannabis are used as well as medical marijuana. But as I said, there are these pharmacological grade tablets that are prescribed for other indications that would also come under that category. But I think the general consensus use of the term medical marijuana really is for the prescribed herbal properties, preparations of cannabis. But we're not really sure what the relevant constituents of THC versus CBD may be in these so-called, in the medical marijuana compounds.

Soania Mathur: Okay. Great. Dr. Kluger, I read that all living animals, I guess with the exception of insects they said, have receptors for cannabinoids. And for most PD, how's marijuana hypothesized to work? Do we know that yet?

Benzi Kluger: Yeah, it's a good question. So I guess to start with, the first part of your comment or question is that we now know there is something called the endocannabinoid system. So in other animals and in people, there are receptors in the brain that respond to chemicals that resemble chemicals found in the cannabis plant, what are called endocannabinoids. And this is pretty similar actually to, some people may be aware of something called endorphins, which is a pain system inside the brain and body that responds to compounds that are similar to opiates or morphine. So it's a pretty analogous process in the brain. One of the things that's I think's intriguing about it, and why there's been a lot of interest for it for Parkinson's with these, is that the highest concentration of these receptors in the basal ganglia and also in the cerebellum, so there's a very high concentration of these receptors in areas that are important for movement and that are involved in Parkinson's disease. So that's something that's intriguing.

In animal models, you know, it's hard to tell exactly as, Dr. Fox had mentioned, there are now known to be over a hundred different cannabinoids with varying effects. And so it's hard to know how such a complex mix would actually work. One of the things that I often do when I give talks on marijuana is I'll pull up a

slide of Cheech and Chong and ask people if people on marijuana tend to move faster or slower. And the answer is typically slower. And I think what surprises a lot of people is that if you directly stimulate cannabinoid receptors, they actually decrease dopamine. And there have been animal models where cannabinoids have been used, cannabinoid agonists and things that stimulate those receptors to actually mimic Parkinsonism and to slow down movement.

So that being said, there are also cannabinoids that block those receptors. There are cannabinoids that are what are called partial agonists so that they modulate those receptors. So it's not an all or a none thing. And you can imagine that in some circumstances such as dyskinesia, that turning down dopamine could be a good thing. You know? So that's, you know, kind of a long winded way of saying that it's complicated. I don't think it's going to be so simple that cannabinoids, or all cannabinoids, will be the answer to all problems, but I think it's possible that certain cannabinoids or certain mixes of cannabinoids may be helpful for both too much movement by potentially turning up the system, and by too little movement potentially by turning it down.

The other thing that I'll add, which has been intriguing and is studied in animals, but we certainly don't know in people, is whether or not cannabinoids could potentially be neuroprotective. And so outside of their effects on movement, there have been some studies showing that they may reduce inflammation in certain parts of the brain, that they may have antioxidant properties, that they may calm down activated microglia. So that's another area that's very hot for animal research. There's actually one study right now looking at that in Huntington's disease. We don't have results for that, but I think that's something that is being talked about and that we may hear more about in the future.

Soania Mathur: That's really interesting. It's such a myriad of potential action points with this herb. It's really quite intriguing. Where does CBD fall into this picture, Dr. Kluger, when you're talking about whether it blocks or activates receptors? Evidence?

Benzi Kluger: Right, yeah, so CBD is a tricky one. So THC, which was mentioned, definitely does have some more direct CB1 agonist effects. CBD, at least last I looked, I don't think it's entirely known how CBD works. But it may also work through some ... In the endocannabinoid system, there's, you know I talked about CB1 and CB2, but there's a lot of other cannabinoid receptors out there, and so it looks like CBD may work through some of these other receptors. It may also have effects through anti-inflammation and you know, I guess the bottom line is that we don't entirely know how CBD works.

Soania Mathur: That's a lot of Parkinson's research (laughs) anyway.

Benzi Kluger: Yeah.

Soania Mathur: Right. Dr. Fox, Dr. Kluger mentioned an ongoing study in Huntington's disease. Do you know what some of the ongoing studies are in Parkinson's that are close to completion, that physicians are sort of waiting to see the results from?

Susan Fox: Right. I mean there are some clinical studies that are beginning or are in progress looking at cannabis products for some of the symptoms of Parkinson's. So for example, we're doing a study looking at combinations of CBD oil, combinations of CBD/THC oil, cannabis oil for patients with pain for Parkinson's. So we haven't really touched on some of the non-motor issues that cannabis products may help Parkinson patients with. Heard already about some of the motor, but some of the non-motor may be also potential targets for cannabis products. So this is a trial that we're doing here in Toronto, and we're really starting off just trying to find out what the best combination of THC/CBD is in a patient with pain in Parkinson's to determine the safety and the tolerability and then the potential dose to then take into a double-blind, randomized, Phase 2A trial. So this is sort of the first stage of investigating that.

There are other centers I know that are either doing or planning studies to look at cannabis products ad pain. There's a group in the UK that I know are interested in doing this, and their plan I believe is to use one of the other preparations that's available clinically, which is the spray. The nabiximols spray preparation of cannabis that has been licensed in several countries around the world for use in a spasticity related to multiple sclerosis. And so they're going to use that as a type of cannabis product for Parkinson's disease pain.

There are preclinical studies, I know, looking at other areas of the cannabis pharmacology. We already mentioned the mechanism of action of CBD, which is very complex, and it may work through so-called non CBD receptors. So it may target some of the other enzymes that are involved in cannabis metabolism as a way of manipulating the cannabis system. And I know there are preclinical studies looking at models of Parkinson's to see if targeting some of these enzyme systems may be a better way of modulating the cannabis system to alleviate some of the motor symptoms of Parkinson's. So these are ongoing. So I guess, watch this space to see how things develop in the future.

Soania Mathur: Yeah, very, very exciting times actually for this area. But Dr. Fox, you actually made a good point about the non-motor symptoms. So I guess in general, what are the symptoms that have been shown to be potentially targeted by cannabis in terms of improvement? Motor and non-motor?

Susan Fox: Well, I guess so far, most of the focus has been on the motor symptoms of Parkinson's. So tremor you heard about levodopa-induced dyskinesia where there have been a couple of trials done. So far, the evidence is not that strong for alleviating the motor symptoms. The American Academy of Neurology guidelines published in 2014, in fact, said that there were currently no, there's no evidence for treating tremor or dyskinesia with the currently available cannabis products. I think my feeling is that it's the non-motor symptoms that probably are going to be the most likely to perhaps be helped by cannabis

products. As I mentioned already, pain, but the other one may be sleep. And so obviously this is probably the area, that these are the more interesting focus I think now with research in the field of cannabis products.

Soania Mathur: Right. Dr. Lavretsky, are there any ongoing studies on the effect of marijuana on cognition and mood in Parkinson's? I know that's an area of your interest.

Helen Lavretsky: I'm sure some efforts are ongoing and certainly patients are using it for that reason. For anxiety, depression, insomnia commonly. And I'm not aware of any ongoing trials at the moment.

Soania Mathur: Is there one type of formulation that works better for anxiety, depression? I've heard that there might be some potential benefit.

Helen Lavretsky: CBD oil routinely is sold for that reason. And some of the providers label it as for anxiety or insomnia. Or pain.

Soania Mathur: Okay. Right.

Helen Lavretsky: So CBD oil would be helpful. But you know, patients tend to use all sorts of variety, a variety of preparations with THC included.

Soania Mathur: Right. Dr. Kluger, are there any other studies that are exciting to you that are coming down the pipeline that you wanted to mention?

Benzi Kluger: I could mention, there is one large study, I'm not directly involved with it, at Colorado that's using CBD for tremor. And one of the things I guess I would to add to what Dr. Fox had to say is that I would consider that the trials that have been done to date are more inconclusive than negative. That we are not really sure of what the right cannabinoid or dose or mode. So it's still very early days. Two of the things that are actually different about the CBD trial that's ongoing here is, one, is that they are using a much higher dose than had been done in prior trials. And what people here may not be aware of is CBD was recently FDA approved for epilepsy. For a certain type of epilepsy. And the doses used are a lot higher than would typically be used just getting product from a dispensary. But this one is using a higher dose.

Another thing that was the limitation of prior studies is that they tended to be pretty short-term and they had a small number of people. So it may be that there was a small fact, but it was missed because of the study design. So I am looking forward to see what that study shows. The other thing that I think is important about that study, and is important to be aware of, is that they're also doing a very careful job to look at side effects, particularly cognitive side effects or other side effects. And that's something that I think people need to be aware of if they're considering using cannabinoids, is that, at least in prior trials, there have been some problems with low blood pressure, dizziness, balance. There is a potential that it could affect thinking and memory, that it could exacerbate

apathy. There is some evidence that at least certain forms of cannabinoids, you know, potentially could even heighten or worsen depression. So I think people need to be cautious. Even though it's a natural product does mean that it's without side effects.

Soania Mathur: Oh that's absolutely correct. I think anything you take into your system has potential side effects and you have to be careful of that. But you know, Dr. Kluger, I'm wondering, there's so many anecdotal reports from the community about the benefits of cannabis, and I think people are sort of also ... You mentioned sample size and duration of studies. It's the study design, but also maybe dosage is sort of been slowing down getting conclusive results one way or another. Are there other barriers to research into these compounds, why they're taking so long? Sort figure out if this can be proven on a scientific basis?

Benzi Kluger: Sure. Well, one thing, which I think may be part of this webinar, and I know Michael J. Fox Foundation and Parkinson's Foundation and others have been arguing for this, and there was a recently a comment period for the FDA, is that there have been legal barriers to research. And just to give barriers to research. Just to give you an idea about that, so for the CBD study done in Colorado, even though cannabis is legal in the state of Colorado, it's still federally illegal. The University of Colorado actually ended up building a new building without any federal dollars for any of the bricks in order to do some of their research. Even in a state where you think it might be fairly easy to do this research, it's not and there's a lot of barriers and hoops and things that make it difficult to get these things off the ground. So both legal and regulatory and logistical are there.

It's also been difficult, and this is something that comes up across the board for complimentary alternative medicine, but trying to determine how to study it best. There's arguments that can be made particularly from a scientific perspective for using very pure purified compounds. So just pure CBD and pure THC. But I think a lot of people feel that the plant-based compounds that are dirtier may actually have a greater clinical effect. But if you are using plant-based compounds, whether it's cannabis or other complimentary medicines, then you run into the question of quality control and dose and things like that. I think in general, cannabis is hampered by a lot of the same problems that other complimentary medicines are in terms of study design.

The last thing is sponsorship, that there are a few companies now, Sativex and Epidiolex and others that have pharmaceutical grade compounds they can sell. But if you're more interested in the plant based compound or if you're interested in things that don't have a pharmacological or a pharmaceutical product, it can be difficult to get or find funding to do the research. So there's a number of barriers to getting this off the ground.

Soania Mathur: Right. Dr. Fox, being in Canada where it's legal, do you find similar barriers in terms of study design and getting the right product, or is it a little bit different here?

Susan Fox: No, I would echo exactly what Dr. Kluger just said, that in fact since the legalization of personal use in Ontario and in Canada, that in fact getting Health Canada, which is the FDA equivalent, approval to do clinical trials using cannabis products has actually been even harder. This is one of the barriers that we're facing at the moment, but I'm hoping that this will get eased through shortly. It's certainly making it a little bit challenging to do studies.

But I'd also echo what Dr. Kluger was saying about the challenges of the type of cannabis that we're investigating. There are so many different varieties, dosing, methods of delivery, properties, et cetera, that it's not just one single drug. It's a multitude. This is one of the big, big challenges with this whole field. I think this is what's causing some difficulties and making it difficult to come to conclusions and have a good evidence based approach to dealing with medical marijuana, cannabis, and give answers to patients. I still think it's a very challenging field.

Soania Mathur: Yeah. Medical research is challenging unfortunately, but it's necessary to go through these processes for sure. Can we go onto the next slide please?

Matt, you and I know what a hot topic this is for our community and you come from a state where cannabis is legalized, California. Did you have any personal experience with this compound, and what did you notice?

Matt Ackerman: I do. First I would start by saying thank you to all the researchers and medical professionals on this call that are helping me understand the scientific part of it because I'm not at all scientific but I never smoked dope as a kid. It was kind of the Wild West. I had heard it talked about as to easing pain and back when it was still legal, people got medical marijuana cards in California and they could go to specially licensed dispensaries that were very tightly controlled. I never thought I'd have to deal with this, so I just kind of ignored it.

Then I got Parkinson's and I thought, well, I may as well try some of everything. One of the themes that I know we'll touch on later is all the other things I've done as well. But with regard to marijuana and cannabinoid and all that, I think it's important to highlight for everybody that when we refer to marijuana, we're talking about typically the natural state of the plant, the organic, home grown, or even commercially grown. But it includes the THC and the CBD.

I started off by taking what was given to me by somebody who lived where they grew a lot of dope, and it was CBD oil. This was when I was first diagnosed and I had a lot of pain. I had an unusual symptom, a lot of pain in my shoulder. Caused, I think, by me compensating for the effects of the Parkinson's on my right side. I started taking it and I took it at night, and it made me sleep better. It seemed to make me sleep better. In the end, I'm going to acknowledge the fact that maybe it has something to do with faith, but in the end I don't care what it is. If I feel better, that's a good thing.

I did that. This was home distilled by a guy who was very professional and so forth. He was set up to take advantage of the legality of it when it became legal. So I sort of graduated from that. I still stayed with the CBD at night, but I moved to a CBD oil that had been infused in coconut oil. A little bit easier to take, a little less caustic, didn't taste terrible and whatnot. It seemed to have the same effect. Again, maybe it was the routine, but I felt better.

I've also tried edibles in a variety of forms. I have a funny story to tell. One of them was gummies, and they were blue. They were blueberry. One day I left them in the car.

Soania Mathur: Oh no.

Matt Ackerman: I didn't realize what heat does to gummies. I went to eat it, and it wasn't any longer in solid state. It was kind of in this gooey state. Well I dipped my finger in it because I really wanted to have some. I ended up getting it all over my beard. So I had a blue beard for a while. Live and learn.

Soania Mathur: Did it work?

Matt Ackerman: Pardon?

Soania Mathur: Did it work?

Matt Ackerman: Yes. It seemed to have a positive effect. What I've learned, or what I believe I've learned in this is that there's a lot of confusing things on the packaging. Very confusing. They have ratios on the package, they have total package content, they have per serving content, and they express it in milligrams. They express it in ratios. Very confusing. For a while, I was hugely confused. At the dispensaries, they really couldn't help because these were more sort of recreational dispensaries and they really didn't have any knowledge.

I've learned by a process of live and learn that I have to be very careful because at one point I took some that definitely put me over the top and I went to a movie and I thought that my legs had been chopped off.

Soania Mathur: Oh, no.

Matt Ackerman: Yeah. Fortunately I didn't have to get up and walk or go to the bathroom or anything. But yeah, it was just sort of sort of wild. So I've tried it in a variety of states and fashions. Another one of the challenges in going to these dispensaries, which I'll refer to as recreational dispensaries, is that they never have the same product twice. I go in and I say, "I really liked these. They were convenient. They were easy." One of the ones that I'm referring to was a very light ... The ratio that seems to work for me is something like a 10 to one or an eight to one, and that's eight parts of CBD to one part of THC. From an absolute dosage standpoint, it's something like 0.5 milligrams of THC.

Now I acknowledge all the things that the researchers have said about the variability and so forth and the lack of testability in some cases. But that seems to work well for me. The product that I found that was very convenient was like a tablet that was sort of mint flavored. I could put it under my tongue and let it absorb through intra lingually and that seemed to work pretty well. It helps me control my tremor. All different kinds of factors.

Soania Mathur: All different types to take into consideration. You're right. I mean Parkinson's disease affects us in so many unique ways. Everyone's different. Everyone's going to respond to medication differently. I guess everyone will respond to marijuana or CBD or THC, whatever you end up taking, in a very different way. I do want to talk about the formulations in a bit, Matt, because I think you're quite right. I think there is a lot of variability in what you get, either recreationally particularly. But I just want to step back for a moment and ask the clinicians on the call that even though we don't have any formal scientific studies yet to really back it up, in your own practice, are you recommending cannabinoids as part of your treatment of managing Parkinson's disease in certain patients? Dr. Kluger, maybe you can start with that. Do you find it helpful?

Benzi Kluger: Sure. Yeah, I'd be happy to share my approach. Yeah. In general I would say that, and I actually have a frequently asked questions sheet that I have for medical marijuana. In the state of Colorado, which are similar to other states in the U.S. I don't know how things work in Canada, but in Colorado at least as a physician, I don't prescribe marijuana. I can fill out paperwork that would allow somebody to get a license and then work with the dispensary. I think in some ways it would be advantageous if we had things that were well tested and I can write a prescription and I knew exactly what people were getting, but that's not the case. That's definitely one caveat, and it sounds like Matt has run into that.

The guidance I typically do, we'll have a conversation and first is trying to understand what specifically people are hoping to treat with cannabis. It's not something that I would recommend just for general use. So if people have a specific symptom. In general, the things I focus most on would be sleep, pain and anxiety, muscle spasms. I tend to advise it less for straightforward motor symptoms. Although I definitely have some patients who feel like it's been helpful for tremor or dyskinesias or smoothing things out. Then kind of going through the information sheet I'll give to people, includes the list of side effects, includes recommendations to start low and go up slowly, includes some general guidance for what CBD and THC may be good for and what side effects they may both have. Then I generally recommend to try to stick with a single dispensary because even what ... Actually there's been studies showing this that what's on the label is just as likely to be inaccurate as accurate. If you go to one dispensary and get 10 milligrams of CBD and go across the street to a different dispensary, the effects may be totally different.

Soania Mathur: Wow. That's concerning.

Benzi Kluger: Those are kind of the general guidelines that I will give to people. Kind of like, I think, your experience at Matt's experiences, yeah, it's kind of hit or miss. I think the symptoms that are greater hits would certainly be things like pain, sleep and anxiety, that motor symptoms I think are less reliably controlled. That's just been my personal experience from case series. But there is definitely a lot of research that still needs to be done to back up both clinicians as well as patient's impressions.

Soania Mathur: Dr. Fox, do you have similar experience, or do you sort of address it similarly in your practice as well?

Susan Fox: Yes, I would say so. I would not prescribe or recommend cannabis products at this point. People ask me, I think, every single day. Many times it's one of the commonest questions I get asked. I usually go through the issues, particularly focusing on the side effects, because again I think this is so important that even though it is a natural product, that there are significant side effects. Particularly in people with Parkinson's who already have maybe low blood pressures or sleepiness as a result of the disease itself. We don't want to make these things worse and cause significant side effects. I have a conversation about the lack of good evidence but anecdotally, some people have had benefits. The side effects and if people are still keen, I'd say be very careful. Start with a very low dose. But I certainly don't suggest or prescribe it at this point.

Soania Mathur: Do we know about any of the long term effects of marijuana in PD patients specifically or in general?

Susan Fox: Okay. I don't think we do. I mean there are certainly concerns in other populations, teenagers, about long term cognitive issues. Other panel members could probably address that better than I can. I mean I think long term, there may be possible concerns, but we don't really have that evidence I think to know conclusively.

Soania Mathur: Dr. Lavretsky, do you want to comment on that? Dr. Lavretsky?

Helen Lavretsky: Yes. Hello?

Soania Mathur: Hi. Did you want to comment on the potential cost of long-term use of marijuana maybe having issues with cognition?

Helen Lavretsky: Yes. It's being studied intensively in older adults and especially ... Not just older adults, in adults, in terms of affecting cognition and driving abilities, there's certainly indication that alertness and driving ability is impaired with the use of marijuana. There's not much research on the effect of CBD oil in terms of impairment of driving abilities. But the information will be coming shortly. There's a retrospective study that studied cognitive decline in older adults in those who used marijuana in adolescence and adulthood, showing that there's a greater likelihood of cognitive decline in those who use.

Soania Mathur: Do you find it useful in your practice at all with ... You've mentioned with depression and anxiety that there's been some work in that area. Do you find it useful in those patients?

Helen Lavretsky: Right. What is important is also patients' preference. Sometimes patients come in and say, "I prefer natural remedies." Or they have significant side effects from traditional medications. This would be the best candidate for the use of cannabinoids and CBD oil. I would recommend to consider this as an option, but it really depends on patients' preferences too. Some of them had prior experience with ... bad experience with marijuana use in younger ages, and they prefer to steer away.

Soania Mathur: From that. Okay. Another question that came up is actually, and Dr. Kluger, maybe you could answer this. Will marijuana affect the way your other Parkinson's medications work? Will it reduce the effectiveness of your dopamine replacement? You mentioned before about how sometimes it stimulates and sometimes it drives it down in terms of the dopamine effectiveness.

Benzi Kluger: Yeah. There are not direct drug-drug interactions, at least that have been described so far. I think there may be, and I can look it up, one antidepressant. There are some antiepileptic drugs where they're actually drug cannabis interactions. So that is possible. It would be important, particularly if people are on multiple medications, to try to clear that with a pharmacist. We do have a pharmacist here in Colorado who we can ask those questions to. That being said, I think to echo both Dr. Fox and Dr. Lavretsky, is that there are potential adverse effects that may go against the desired effects of other medications. An example of that would be blood pressure, that some people with Parkinson's may have orthostatic hypotension, may even be on medications to try to get their blood pressure up, and medical marijuana products have the potential to lower blood pressure.

Similarly, as I mentioned earlier, that some formulations that are particularly from dispensaries where it's less regulated, have the potential to slow people down and may even heighten bradykinesia. So it's possible that the cannabis products could be working at cross purposes to your medications. So it's definitely something that you'd want to think out. To echo myself and Dr. Fox is in general, really recommend starting at low doses, going up slowly, and making sure that we have a clear goal in mind.

I think you asked a good question, which we don't have a lot of evidence on, is what are the long term effects of cannabinoids in older adults? I think in general, we don't have a lot of evidence. There's certainly some evidence which has been mentioned in adolescence and for people who have used it in adolescence later. But for the formulations that are being prescribed today and for people who start using as older adults as opposed to using it in adolescence where their brain is still developing, I don't think we know the answer. So it's, I'd

say, I think a really important question and important area for research that should be tackled.

Soania Mathur: So interesting, this conversation. We could spend all day I think talking about it. But let's just move on to the next slide if we can. This is just a brief introduction to Fox Insight. If you don't know about it, Fox Insight is an online clinical study where people with and without Parkinson's disease share self-reports on their health, and that wealth of data we hope will help transform and guide the search for better treatments. They will be launching a survey on marijuana use and experience early next year. So your input can be really important to that study and can help inform future studies. The website is on the slide and if you could register for Fox Insight today, that would be a great idea. This is going to the next alternative therapy that we're going to talk about next. Acupuncture. Dr. Lavretsky, for those who have not experienced acupuncture, what exactly is it, and what does it involve?

Helen Lavretsky: Acupuncture is a part of traditional Chinese medicine. It's one of the many tools that is being used for symptoms like pain, fatigue, anxiety, insomnia, and sometimes movement disorders. Some of the acupuncture studies coming from China have used it for neurodegenerative diseases like Parkinson's with positive outcomes, both cognitive and motor. But the primary symptoms typically cognitive and motor, but the primary symptoms typically are the pain, depression, anxiety, and insomnia. It could be very powerful technique to add to the traditional treatments. Again, everything in integrative medicine depends on personal preferences. There is certainly a fear of needles is quite prevalent among people, and modalities that can substitute for acupuncture, like acupressure, that doesn't involve the use of needles. Or moxibustion, that is using the same principles but doesn't use needles.

Soania Mathur: Right. Matt, I know you had a time where you were a little bit wary of the number of needles that acupuncture involved. What was your experience like with acupuncture?

Matt Ackerman: Shortly after being diagnosed in 2010, somebody sent me an article on a Chinese fellow who had had acupuncture in his family. They were all acupuncture practitioners for the last 300 years. Fortunately, he was very close to where I lived and I started seeing him. I was scared to death of needles. I can't even stand to have my blood drawn, so every time they poke a needle in me. I want to emphasize that acupuncture needles are very, very fine needles that you hardly know that they've gotten in you. But I had a fear of needles. I swallowed hard and I went in and I started going to him regularly. That was about once a week. Now he advocated that I should be going three times a week, but I just couldn't fit it into my work schedule and so forth.

What I found is that I was able to relax, and that's hard to imagine when you have 40 needles in your back side, in between your toes, in your eyebrows, places like that that just aren't comfortable. But what I found is that with the passage of time, I would go into the acupuncture and he'd put 30 or 40 needles

in the front side of me. They'd sit there for 30 minutes or 20 minutes and then he'd put 30 or 40 needles in the backside of me after I rolled over. They'd sit there for 30 minutes. I'll be darned if I wasn't able to fall asleep flat on my back and flat on my stomach. This told me that I was getting relieved.

There were no side effects, no negative effects other than periodically, and I'd say one out of a thousand needles that he put in to me, it hit something and it felt like electricity going through my body. But it was fine. It worked out well, and I embraced it. I sort of graduated from that and I don't get acupuncture as often now, but instead I get deep acupressure. He had actually done that for patients that were hypersensitive to needles. That's worked out very well. It's almost like a form massage the way that they do it. I've had a very positive experience and believe that it can bring real relief. Again, the thing I want to emphasize is that everybody suffers from something different. I had pain in my shoulder, I had anxiety, and it definitely treated both of those.

Soania Mathur: Right. You have a good result. That's good to know.

Matt Ackerman: I did.

Soania Mathur: Can we move on to the next slide please? I think in general, lifestyle modifications are a popular topic for those of us with Parkinson's because there are some variables that we actually do have control over unlike our diagnosis. Those areas like sleep, exercise and diet. With regards to the latter, Dr. Fox, are there any clear guidelines regarding diet as well as vitamins and supplements in Parkinson's disease?

Susan Fox: Right. This obviously is another very common question that I get asked. I guess the bottom line is it's not really. Diet, I usually advise people to eat a well-balanced, healthy diet. This helps with the digestion, reduces the risk of constipation. The issues of high protein and reducing absorption of Levodopa, in some patients, people with Parkinson's can be very significant. In others it's not an issue, but it's something I talk to people about. Perhaps avoiding a lot of protein in the middle of the day and having it at the end of the day. Taking your medications at least 30 minutes before you eat. But otherwise in terms of diet, nothing else specific.

Supplements, yes, coenzyme Q10 has been studied in Parkinson's disease. There were a few trials that may ... There were some possible hints it could have some neuroprotective effects at one dose and then higher doses didn't show that. I think the evidence has been inconclusive. However, we do know that the mitochondria, which is where coenzyme Q10 works, are impaired. The function of the mitochondria is impaired in Parkinson's, so the rationale is very reasonable to use CoQ 10. So if people ask, I say, "Well go ahead. There's no side effects. You obviously have to buy it, but there's no problems with using it."

There have been studies looking at many other supplements, but really the evidence is much weaker. I'd add into their vitamin D as something that I usually suggest to people because of bone health in Parkinson's is important. There's some evidence that people with Parkinson's have a higher incidence of osteoporosis, thinning of the bone. So having vitamin D is a good way of reducing the risk of osteoporosis, and obviously if you fall, the risk of breaking a bone.

Soania Mathur: Right. Yeah. No, that's very helpful. The next slide, Matt, the first thing I noticed was a picture of what I believe are your boxing shoes, an part of your approach to integrative care, in your case.

Matt Ackerman: Yes. I would have to say it was something I learned about when I was still working, but again, life got in the way. I couldn't figure out how to get to the gym, get all sweaty, do boxing and then go back to work. So I delayed doing it. That was one of the biggest mistakes I've ever made. In retrospect, I've now been boxing 18 months and I started the Monday after I stopped work. I stopped work on a Friday, and I started boxing on Monday. I go four to six times a week for an hour and a half each session. It's become a really important part of my life, and it makes me feel so much better for all of the main reasons. One is it's exercise at the top of the food chain, and it's good exercise.

One is its core strengthening, which helps reduce the incidence of falling and tripping and things like that by having greater core strength. It's muscle mind memory coordination as you learn how to punch properly and pivot off your foot, step forward with your jab and pivot off your right foot with your hook. The least talked about benefit of it, is it's a natural support group. It's a bunch of people in a room getting hot and sweaty, talking about what their challenges are, but not talking about it in a negative way like you find in a traditional support group where people sit around the table. I find that that's a huge benefit and it's become something I'm very dependent upon.

I don't feel well if I go a week without boxing or severe exercise. I find it's hard to get to severe exercise without doing the boxing. I'm a big proponent. I took that picture not realizing ... Well, actually that was at another alternative place. This was in the therapy center in Italy that I went to that I imagine we'll talk about later, but I loved the saying on the wall, "Will it be easy? Nope. Worth it? Absolutely."

Soania Mathur: That says it all.

Matt Ackerman: That's why I encourage it to everybody. Yeah. So do what you want to do, have faith, and make it work. If it doesn't work, move on.

Soania Mathur: That's great advice actually. That's why the slide also mentions things like yoga, Tai Chi, dance, other exercise approaches. Whatever you can do consistently and do well and is of your interest. I think it's the most important thing for sure.

Let's go into some questions and answers in the few minutes that we have remaining from our listeners. The first question I have is for Dr. Kluger and it's, how do I find a qualified supplier? I think they're talking about marijuana at this point. Cannabis.

Benzi Kluger: Yeah, that's a good question. I wish I had a good answer. As of now, at least in Colorado, and I assume it's similar in California and I'd be interested to hear if it's any different in Canada, but it's not something that's regulated. So certain places may elect to self-regulate but you just have to take them on their word that they are doing that. I think a lot of times, people will find good dispensaries via word of mouth, through support groups, through other things. But there's, at least to my knowledge, not a great way to know that one dispensary is going to have better product than another.

Soania Mathur: Right. I don't know who may be able to answer this, but there's a couple of questions on hemp oil and whether or not that has been shown to be effective in any way in Parkinson's disease. Dr. Fox, do you know anything about it?

Susan Fox: Yeah, I don't know anything specific about hemp oil. I'm not aware, but maybe Dr. Kluger knows.

Benzi Kluger: Yeah, I was going to say that. Hemp, by definition, means that there's less than 0.3% THC. Hemp oil is essentially CBD and like everything else we've discussed, there's really no good research evidence behind it at the current time.

Soania Mathur: Okay. This is an interesting one. Maybe either Dr. Fox, Dr. Kluger, or Dr. Lavretsky, is there any benefit for Parkinson's with hyperbaric oxygen therapy? Or maybe you have experience with hyperbaric oxygen therapy or know of any studies?

Helen Lavretsky: There have been studies for a variety of diseases, psychiatric diseases, with some results even for schizophrenia. I'm not aware of any studies specifically for Parkinson's disease, but many people would try anything. Basically the reason to use this is to improve oxygenation of the brain and improve oxygenation and provide antioxidant activities to the brain and the blood.

Soania Mathur: Right. But you don't know of any studies in Parkinson's in particular?

Helen Lavretsky: No. Yeah. Okay. Go ahead.

Benzi Kluger: I was going to say my typical advice is generally to tell people to avoid it, that there really is not any good evidence for it for Parkinson's, for Alzheimer's, for any other neurodegenerative illness. It tends to be quite expensive. From my standpoint, and there's also a reason to believe that it could be harmful, so you could actually increase oxidative stress by increasing oxygen. My typical advice is for people to avoid it just because it's expensive. There's some potential

danger, and there's really no evidence right now of efficacy in a neurodegenerative illness.

Soania Mathur: Right. Good to know. Dr. Fox, does DBS have any interaction with marijuana? One of our listeners wants to know.

Susan Fox: Right. No, it won't do. There is no direct interaction between. If you've had DBS and you want to try marijuana, then there's no contraindications apart from the same risks are attached to using the cannabis as you would if you didn't have DBS in terms of low blood pressure, sedation, all the other things we talked about. But having the surgery itself is not a contraindication.

Soania Mathur: Okay. Another quick question for you, Dr. Fox, the dosage of vitamin D you were discussing, what dosage would you recommend for patients to take?

Susan Fox: Well, there isn't really sort of a direct answer to that. I mean I usually advise people to take the usual recommended that's when you buy it over the counter. So one to two tablets a day of the 1000 International Unit preparations.

Soania Mathur: Okay. Dr. Kluger, mucuna pruriens. What's your take on that?

Benzi Kluger: Yeah. Mucuna is interesting. Mucuna actually was first described in Ayurvedic medicine, which is the traditional medicine of India several thousand years ago and was used for their version of Parkinson's, and it turns out that mucuna actually has Levodopa in it to a pretty high concentration. So it's interesting that they were using Levodopa to treat Parkinson's hundreds of years before we had a diagnosis of Parkinson's and before we started using dopamine in the West. That being said, the animal studies are interesting. It looks like there may be less risk of dyskinesia. There haven't been very many studies in people. Just like marijuana, it's hard to know if the source that you're getting is reliable. A lot of studies suggest that more often than not when you're buying supplements that you're buying rice powder and house plant.

In fact, the Attorney General of New York did an investigation of General Nutrition Center and other suppliers of supplements and found that that was the case, that more often than not what was on the label was not what was in the product. Even though I think it's actually a promising thing and I wish things were better regulated, it's a hard thing to recommend because we don't know if people are getting a reliable product and we really don't know what the correct dose is or things like that are. I have a few patients who use it and they use it as a supplement to their Sinemet, but I don't know if it's placebo or if they're getting a real product or how it's working.

Soania Mathur: Right. As we wrap things up, I wanted to give each of you an opportunity to answer one final question, just one sentence, if possible. When it comes to patients exploring complimentary alternative therapies, what's the one thing that they should keep in mind. Dr. Fox?

Susan Fox: I think the safety of the compound you're taking. Just because it's natural doesn't necessarily mean it's safe.

Soania Mathur: Perfect. Dr. Kluger.

Benzi Kluger: Yeah, I would echo that. I guess. Yeah, when I have conversations with people, it's always kind of a balance. Is the cost worth the potential benefit, and having an open and honest discussion about risks. I guess maybe to add to Dr. Fox's would be to, as best as you can, make sure your doctors are involved with your decisions. I think a lot of people have a tendency to not discuss these things with their physicians. That could be a mistake because it can be a source of side effects or other symptoms and the physician wouldn't know and what you were doing.

Soania Mathur: Dr. Lavretsky?

Helen Lavretsky: I would say if you had to choose among a variety of modalities, choose ones that bring you joy so that it improves your quality of life purpose and resilience to deal with a chronic disease like Parkinson's disease.

Soania Mathur: Excellent. And Matt?

Matt Ackerman: I'm going to be a little more philosophical about it, and I'm less guarded because I hear the medical professionals being relatively guarded. I respect that, by the way. What I'm going to say is much along the lines of the last comment, and I'd say pick something that you're interested in and then figure out how to follow it closely and keep a good log. Talk to your doctor. But I've found that my doctor, and I have a great doctor, but Western medicine doesn't respect alternatives as much as it probably should be done. I'd say try everything, but do it in a very controlled way. Do it judiciously and carefully, as has been pointed out, but look at everything.

Soania Mathur: Good point. Good point.

Matt Ackerman: There are things like, we've talked about marijuana, we've talked about acupuncture. I think a regular regimen of massage can work wonders. It helps me with my tremor. I went to a European therapy center in Northern Italy and had tremendous results. It was dirt cheap. It was \$200 a night, and that included therapy and room and board and it was spectacular. My final comment on that is that when I returned from this trip to Italy, I realize that one of the reasons why it worked so well was that I was completely void of any responsibilities when I was in Europe. I didn't have to worry about where to park a car. I didn't have to worry about the traffic. I didn't have to worry about making food, going to the store. Everything was taken care of. It was spectacular.

Soania Mathur: That's amazing. Yeah. Thank you for that. Thank you kindly everyone for joining us today. I hope you feel your time is well spent and that you found the

discussion informative and valuable. I know I did. A very special thank you to our panelists, Matt and doctors Fox, Kluger, and Lavretsky for sharing your time and expertise with us today. We'll be sending all our listeners a link to the webinar on demand to listen again or share as you'd like. Mark your calendars for our next webinar as well on November 21st. Remember everyone, Parkinson's affects all aspects of life and needs to be approached in a variety of ways in order to live well with this disease. Until there's a cure, it's really all about quality of life. Educate yourself and empower yourself to not just live with Parkinson's disease, but thrive despite it. Thank you everyone.