

Date: 6-19-13

United Spinal Zapping the Pain Away

www.2020captioning.com

USA: 1.866.554.2099

This text is being provided in a rough draft format. Communication Access Real-time Translation (CART) is provided in order to facilitate communication accessibility and may not be a totally verbatim record of the proceedings.

>> Jennifer: Offered by United Spinal Association and National Spinal Cord Injury Association. I am Jennifer French, I'm from Neurotech Network and we are presenting today about advancements in managing chronic pain for people with spinal cord injury and disorder, in other words known as Zapping the Pain Away and we will be focusing on technology today. Thank you all for coming. I appreciate you taking the time out of your day to learn a little bit more about neurotechnology. Before I get started I just thought I would give a quick introduction of myself. I am the Executive Director of Neurotech Network, we will explain what the organization is in a little bit and a person living with a spinal cord injury. When I was a 15-year-old I had a snowboarding accident that left me with incomplete spinal cord injury C6-7 level and low level quadriplegic and living with paralysis the last 15

years, and last 13 or more I should say I have been using different types of neurotechnology for my independence in managing a lot of secondary conditions that come with neurotechnology, so I'm not just the Executive Director but I've a user and a passionate person about it as well. So enough about me. Let's start talking about technology for chronic pain. But before we do that, we have a few logistics to go over for you -- with you actually. On your screen you're going to see a window where you can ask questions. Please we would like you to ask questions throughout the presentation, and we will be able to answer those online. If we are not able to answer them during the presentation, we do have a question and answer session set aside at the end of this presentation. Also if we are not able to get to your question within our timeframe, I will be able to answer those personally afterwards via e-mail, so I want to make sure everybody's questions get answered. Also on that screen that you see where to ask questions you will also see a chat box. If you want to see the live transcription of this presentation, please go to your chat box and you will be able to view it from there. It will also be archived as well after this presentation. So enough about logistics. Hopefully you can see what's happening there on your screen, and let's get into what we are going to talk about today. So what we are really going

to talk about is just a quick overview of understanding pain and really kind of the classifications of pain. We are going to go over some of the general options for pain management that are out there today, and then we are going to talk about more specifically those types of technologies that are available for treatment of chronic pain, and also those that are coming down the pipeline as well that are currently in development and really exciting. We will also leave you with some resources so you can learn more about the technologies that you talk about today and also some general resources as well. As we go through this presentation well be having a lot of hyperlinks to different types of websites.

Please don't feel that you have to write all of those down or copy them. We have a copy of this presentation in PDF format that will be posted on the webinar website as well as the Neurotech Network website, and you will be able to access that and therefore access all the hyperlinks, so feel -- please don't feel obligated to write a lot of these links down as we go through the presentation. Also if you would like to know more about the topic about chronic pain, please be looking for an e-mail from the new mobility magazine. We will be sending out an e-mail how to get a free copy of strategies for managing chronic pain, and that will be coming to an in box near you in the near future. So that's what we will be talking about today,

and then some resources for you to learn about more in the future. Before I get into anything more about Neurotech Network we have to do this one legality disclaimer page that I need to read to you, so let's get through it quickly to make it as painless as possible. The information presented in the webinar is not meant to replace the advice of a medical professional. You should consult a health care professional familiar with the specific case, concerns and conditions. Neurotech Network, its representatives, do not endorse, rate, distribute, prescribe, recommend any products for services. We do highly suggest that you take the information that you get today to a trained medical professional familiar with your case and then to discuss those options that are best for you. Whoa. That's the disclaimer for the page. I want to stress I'm a person living with spinal cord injury and involved with the Neurotech technology for a long time and I'm not a medical professional and relaying information to you as much as we can in layman's terms and please again to refer anything more specifically about your condition to a health care professional and we will give you those resources again at the end of the presentation. So what is Neurotech Network. Neurotech Network, we are a nonprofit organization, 501(c) three and focus on educating and advocating access neurotechnology devices, therapies and treatments for people living with

impairment, their caregivers and medical professionals, those are the people that we specifically target. And a lot of our resources are available for free on our website, which is listed there. We have a lot of educational fact sheets, not only just for spinal cord injury but brain injury and a lot of other conditions as well, we also have a fact page on pain management. We have a centralized database where you can go and look up various types of neurotechnology devices and we offer a lot of education courses, so there's a lot of free resources that are available on the website and again those will be available to you for free. So what is neurotechnology? Some of you that have been in my webinars before have already been through this, but we want to make sure that everyone is aware of what kind of the industry definition of neurotechnology is. Really it is the application of medical electronics and engineering to restore and improve function of the human nervous system. So that picture that you see somebody getting electrocuted not actually what happens. Really before we had telephones and iPads and iTunes and everything else we -- Android I should add in there, the mother nature designed the body so that the best way to communicate inside the body is via electrical signals, so really what neurotechnology does is capitalizes the signals that are already happening inside your brain through the neural pathways and

exciting neurocells, if you will, and then using that electrical activity to be able to maybe block pain, which might be talking about today to stimulate muscles and to be able to monitor the nervous system for instance in the case of epilepsy to see whether a seizure is coming on or not. So there's a wide array of neurotechnologies that are out there, and again, this is kind of a general definition to you. When I talk about technologies today, kind of I want to set some groundwork of what types of systems that we will be talking about, and I will return to this a little bit later in the presentation. But really there's kind of two bailiwicks with the hybrid in between. There are external devices, and when I talk about devices, that means device is completely outside the body. And typically how it is used is a touch to the surface of the skin for instance for either a sensing or a stimulating electrode or it might be just sitting on top of the skin or, for instance, on top of the brain to be able to monitor neural activity. Now, all of those are outside of the body. When we talk about implanted devices, those are devices that are implanted inside the body surgically, so they require a surgical procedure to have them implanted in the body. Now, I know a lot of people cringe when they talk about or hear about implanted devices. But when you think about it, we have people walking around all over the world with pacemakers implanted inside of them, so we are

actually very comfortable when you think about it when having implanted devices into our bodies, so when I talk about implanted devices of neurotechnology, a lot of those devices are made out of the same materials like a pacemaker and implanted inside the body and, of course, go through all the clinical trials to prove that they are safe. Now, there's also something called a hybrid, and what I mean by a hybrid, there's a component of the system that's implanted inside the body, and there's a component of the system that is external to the body, and typically the external components and implanted components communicate via wirelessly, so there's no wires protruding through the skin for the two implanted and external systems to connect and that's what we call hybrid systems. So that's kind of setting a little bit of the groundwork when we start to talk about the technology. Now what I like to do is go over some of the basics of chronic pain to help understand what we are talking about when we talk about chronic pain. Now, this is a very, very simplified version of what chronic pain is, and this was sourced from the University of Wisconsin School of Medicine, and there's basically three categories, if you will, of chronic pain. We have the no nociceptor pain which really represents kind of a normal response to any noxious insult or injury to tissue, skin, organs, multiples, joints, et cetera. There's two examples I have there for

you. We have the somatic pain, which is more musculoskeletal pain like joint pain, if you will, and there's also the pain which is more related to the organs and more internal, if you will. The second category is one that we are very familiar with, which is inflammatory pain, which is basically a result of activation or sensitization of pain pathways for a sight of some tissue inflammation. So here are examples for you that are very common from appendicitis to rheumatoid arthritis and inflammatory bowel disease and post surgical pain could be put into that category as well. And the final category of pain, chronic pain, what we call neuropathic pain. And neuropathic pain is caused by a lesion or disease that is into the sensory nervous system and those abnormalities really result in some type of defect that you feel either by numbness or hypersensitivity, if you will, and common neuropathic pain and spinal cord injury pain, phantom pain, very common in fatigue and post stroke central pain. So those are just some categories of it and according to the neuropathy association there are more than 100 types of neuropathic pain out there and 30% unknown is unknown and pain that is complex and understand that even though we might lay it out the and black and white issue, it is still not very well understood and one person might not have one type of pain and might have more types of pain that contribute overall. So really and

what's not really well recognized -- very well recognized pain disorders that are not easily classifiable. So for instance cancer pain or migraines or fibromyalgia are very commonly known disorders, but how we classify them, we are not so sure yet, and also a lot of pain where chronic pain that exists that we don't know the causes of, and this is very much that we are still really learning a lot about. So with that said, what we are really going to focus on is third category, going to focus on neuropathic pain and focusing on those with spinal cord injuries and disorders, but also I'm sure there's some people in the audience that have other examples as well. So when we talk about options of how you manage pain, these kind of a basic pinwheel of some of the options that are available in some of them being investigated, so top of the pinwheel we have oral medications, which are very common, and next it again are injections, and so injections for managing those pains. As we go around the pinwheel, there's pins, there's IDD is, which is inflammable drug delivery system and we go into TMS and TDDS and acupuncture for pain and nerve block strategies as well, so there's a lot of different types of means of being able to manage pain. What we are going to be talking about today are those that are highlighted in the lime green in your screen right now, and those are the ones that will be talking about more in depth and how technology is

used in managing pain. So at this point I want to take a little break and poll the audience to see who we have out there. So I want to know how many people are using different types of technology. So I will ask you a basic yes or no question, you like to know do you currently use one of the highlighted therapeutic technologies to treat your chronic pain? What we are focusing on those are in the lime green, TDDS, TMS, drug delivery systems or TENS units and let's take a second to poll the audience and see what we have here. We are still waiting for some results. Here we have some results are in and we have about 32% of the audience said yes to that question and one of the types of strategies, but about 68% said that they do not. So okay, we have a range of experience out there, and let's go into it a little bit more into those types of technologies because we will be able to learn more about those right now. Again, what we will focus on in the next couple of slides is TENS units, IDDS, SCS, nerve block and TDDS or TMS and then some of the other alternative strategies and technologies. Now, I know the slide looks like a lot of the abbreviations, but we will be able to explain each one of these fully as we go ahead. Let's dive into the technology and let's see what we have. So the first ones we will go into is TENS stands for transcutaneous electrical nerve stimulation, and what it is is delivered as external

device, pads that go on the surface of the skin that delivers a low level electrical stimulation that really is directed to a specific area. And that electrical stimulation is delivered to help alleviate the pain or help block some of the pain messages. Also for micro current electrotherapy is very similar to TENS and it is a different waveform frequency and pulse width than within the device than what you see in TENS. Now, both of these are very readily available as you can see there's eight different examples on your screen of different commercially available TENS and MET units and available through a prescription through a physician. And it is convenient, a lot of devices people take home with them and very easy to travel with, noninvasive treatment and very economical solution. So typically what you see on your screen are eight different organizations that have them, I want to go back for a second. There's one, the bottom row second one in from the right, which is a little bit different, it is device that actually has the electrodes within the unit. So it is something that you actually wrap around a specific area. For instance, a specific area of your leg, if you will. Most of the other devices you see here use what's called surface electrodes, and here you see the surface electrodes. Those two electric that are over on your left-hand side here are typical electrodes that you would find. They have a gooey surface that attaches to the

skin and a little bit of water to attach them to the skin and that's how the stimulation is delivered, but I think that's just one form of electrode. There's a lot of different types of electrodes that are available today and right-hand side of your screen you will see some of. Some of these garments that are now available for delivering -- for the electrical stimulation for TENS units. For instance, a back brace, to go around the foot or knee, if you will, to be much more targeted in the area that you're looking for. So let's talk about TENS units and what's the difference between PENS percutaneous neuro-modulation system and TENS, transcutaneous delivery system, and the main difference is in the electrode and how it is delivered. With percutaneous it is not going deep into the skin, considered deep tissue, but really staying within the skin tissue, but you're penetrating the upper surface. So a really good example of the needles that go in for a percutaneous, you see the needles that are near the bottom of that picture, and those are actually penetrated into the skin. It is a good example of for instance what might be used for electroacupuncture, which is not widely available in the U.S., but much more common over in Europe. Some of the examples of PENS units, a biowave system that uses a very specific current through the stimulation for pain, and these electrodes you will see, small circular electrodes, they have very fine needles in

them, so with the TENS unit it is a gooey surface and penetrate the upper surfaces of the skin to get into the deep tissue. Finally the smart patch you see on the bottom of the screen is patch integrated with the device, so really on the back side of that LED-screen that you see is actually a percutaneous electrode that you put into the area that needs to be -- to be treated. This device is commonly used for shoulder pain for stroke, for shoulder subluxation, so that's the difference between TENS, MET and PENS units. They are widely commercially available, widely available from a doctor, they are can be reimbursed by insurance, not as invasive. So speaking of invasive, we will go into an implant device and talk about the IDDS or what's called implanted drug delivery system, so typically what these are, it is a different way of administering pain relieving medication or even spasticity relieving medication, such as baclofen and this is implanted for those not responsive to other treatments, find are not effective, or if they are using the medication and find that the side effects are really intolerable because how IDDS system works is that it is an actual chamber that's surgically implanted into the body and it has a reservoir for the drug, and the drug is delivered through a small catheter that's implanted into the spinal canal, and that pump actually pumps low levels of the medication directly into the system and therefore the user actually feels much

less of a side effect rather than trying to take oral medications. Now, the pumps do need to be refilled. Typically every month or every few months depending on the level of medication that is used and typically it is refilled by placing the needle through the skin and this is done either as outpatient basis in a doctor's office or by just a regular visit from a doctor. Now, generally before being implanted with a drug delivery system, we highly recommend not to pass this step, and physicians typically offer the step is to offer first time users to be able to go under a trial period. And what that is is to take a low level injection to see how they react to it and go through the full surgical procedure to get the pump implanted into the body. So again, if you are looking into receiving one of these devices, then please inquire about having a trial period before actually being implanted with the device. Now, really it is a very -- it is becoming much more common in terms of an implanted drug delivery system, and it is becoming kind of a mainstay there, if you will, particularly for neuropathic pain and for spasticity. So we have two different devices that are shown on your screen right now. Medtronic has been around with the device for quite sometime and new entrance into the market is what we call the cog men pump and fully implanted system. Next we are going to talk about spinal cord stimulation, and spinal cord stimulation is a hybrid system, if you

will, external system and implanted component, and typically the external component is remote you see on your screen, and what is implanted is these small electrodes are implanted into the spine and as well as IPG, and there's a variety of IPG's on the bottom of your screen. Now, how it works is that electrical stimulation is delivered through those electrodes to block any pain pathways that are going up the spinal cord to the brain. So doesn't really get rid of the pain, if you will, but it stops user from registering the pain in the brain, so don't feel the pain. It also has been known to help decrease spasticity as well. So implanted inside the body are electrodes, two examples of electrodes, there are more examples, and then an IPG, that is completely implant inside the body and part of the hybrid system to be able to communicate with the implanted device as small remote. Just like IDD systems, spinal cord stimulation systems also have a trial period. And again, we highly recommend that if you're looking into these devices and becoming a candidate for it is to request a trial period. And that way you can see if your actual responses to a spinal stimulation system before you go through the full surgery to have it permanently implanted into the body. Now, the interesting thing about spinal cord stimulation systems is there's really three main companies out there that have commercially available. A lot of the organizations -- actually each

one of the organizations I should say have their own consumer support group, and those websites that we have at the bottom of your screen are how we are able to access those support groups. And that way before you -- before you go into looking into any more of getting a spinal cord stimulation system is really to contact those support groups to be able to talk to people that have already been implanted so you really get a good idea of what the procedure is like and what it is like to be implanted with a spinal stimulation system. So I think the organizations have done great job in helping out with the consumer support side. So now we have talked about those, and talk a little bit more about some -- whoops. Let's talk about some alternatives for -- that are out there that are currently FDA cleared. I have two devices I would like to introduce to you that has been recently FDA cleared. And first device is called anodyne therapy and it is infrared therapy system, and it is a device that has been indicated to help increase circulation, also to reduce pain, stiffness and muscle spasms. So as you see, there's electrodes here that are placed in the skin typically with a wrap like we are showing here around the lower leg is an example, but it is not the only way it can be applied, and using actually infrared to provide the treatment. The other alternative FDA cleared device is the Fisher Wallace stimulator. And there's a

picture of it here. It is typically a head wrap that's around the head and there's these two little electrical pads that you put water in them to moisten them up and each go on temporal side of the head, and there's a control unit. Again, this is a fully external system, no implanted component of the system and it is also a portable stimulation system. It has been FDA cleared for insomnia anxiety depression, but also as a pain therapy device. And it really works by stimulating the brain's production of serotonin and GABA and beta endorphins, so that's kind of how this device works. So it is a little bit different than actually treating a specific area, if you will, like we do with TENS and PENS and infrared therapy. So those are two alternatives that have been recently FDA cleared. Now, I will talk about some alternative that are investigational devices that are currently in clinical trials, exciting, and clinical trials and human clinical trials should say they're being used in human trials today. The first one I will talk about is the -- it is a nerve block system. It is device provided by Neuros Altius system, see IPG in front of the picture along with a cuffed electrode, and two components are implanted fully inside the body in the treatment area. There's also the external remote, and those you see in the back part of the picture, so there's a programmable wand for the clinician, there's a battery charger and a patient controller as well. This device is currently in

human clinical trials in Europe. Results from that clinical trial we just recently released in Berlin. In the treatment of neural pain or residual limb pain for amputees which was very promising results that came out, and it is also being hooked up to use for chronic surgical pain, chronic migraine pain and types of neuropathic pain, so still investigational device, but again being used on humans mainly at this point for residual. Second device we will talk about is called TMS therapy, and that's the bottom right-hand side of your screen. This device is FDA approved for severe depression, it is currently being investigated for the treatment of chronic pain. Now, our TMS repetitive trans-cranial magnetic stimulation, and it is a treatment that is done in the clinic and completely noninvasive, and device as person sits in the chair, it is a device that really is treated by the cerebral cortex of the brain and it is being right now investigated for chronic pain purposes, and it is being -- the target stimulation area is the motor cortex of the brain. Now, there's other targets that they are looking into to help relief pain but still main treatments are looking at the motor cortex. The effects have been produced by TMS patients and able to see some effects in the trials for neuropathic pain, fibromyalgia and visceral pain, which we talked about earlier in the presentation. The therapeutic applications for RTMS for pain are limited by short

duration that the treatments last, so only a very short duration treatment. However, they have been able to find that prolonged pain relief can happen if the RTMS sessions can take place everyday for several weeks. Almost needs to be a residual effect that they are finding. And if patients relapse, meaning the pain comes back, after the treatment, investigators are looking at somehow providing an implantable option for TMS for the treatment of pain. So again, it is to stress this is the investigational device, it is used as therapeutic tool for chronic pain is very much yet to be determined, but I think it is a very promising area for the treatment of chronic pain in noninvasive treatment.

The final one I will talk about in terms of investigational devices is what's called a TDDS, and what that stands for is trans-cranial direct current stimulation. This is an example of it. Again, it is an external noninvasive procedure, and it is a device that actually sends small direct currents across the scalp to modulate a brain function or how the brain registers pain, if you will. So tDCS is low intensity stimulator and sends low level current from the positive electrode to negative electrode and when the extremely low level current passes from an anode to a cathode, it may increase activity in the brain by the anode and help decrease the activity in the brain near the cathode, and by that theory they're going on the fact this might be able to improve the register of

chronic pain in the brain. So these mechanisms they are targeting are really considered the result of delivery for the direct currents to safely induce reversible changes in the cortical plasticity. We know plasticity happens in the brain. We are thinking that by using tDCS we are able to impact how we register pain in the brain. And finding how these studies are having different types of results is still very much in the infancy stage, testing them in patients with a wide variety of neurological and psychological disorders and again, this is very much in the early investigational stages. No results have been released yet, but if you go to the website you will be able to learn more about that investigation device. So we have gone around the pinwheel at this point, and before we talk anything more about pain management, really want to take -- to take a step back and stress some consideration that you might want to think about before participating in any type of pain management strategy for technology. First is to understand that chronic pain is a unique condition. And we stressed that the at the beginning. Not all pains are alike. Not all types of pains are alike and not all appropriate for treatment and all types of neuropathic pain. If you remember in the beginning you mention neuropathic association said there's over 100 different types of neuropathy, so keep in mind that it is still kind of an open area, but I think the technology is still a very

exciting area to look at in terms of treatment of chronic pain. So what do you do from the next step coming away from this webinar and do you want to look into getting some of these types of technologies and consider them for the treatment of your own chronic pain? We highly recommend that you review these resources. Again, we will have them available for you at the end of this webinar. If you are considering, take these resources to find a trained professional near you who have been trained in the technology, and I think there's a key point. That's why we left so many hyper links into the presentation, is the best way to find a trained professional who's familiar with the technology is through those websites. Unfortunately Neurotech Network can't keep a database of everyone trained on these technologies because they are constantly changing, but typically the companies have trainers that go out and train medical professionals, and they know where to find the trained medical professionals that can look at your case file and be able to evaluate the technology and see if you're actually a candidate. So we ask that you reach out to them to try to find a trained professional in that area. And then what you do is make an appointment. You call them up, make an appointment for the website and ask for an evaluation if you can be a candidate for that and do your own homework along with the trained medical professional to

make sure the technology is right for you. Now, before you go into any type of pain management technology treatment again you have to think about the commitment you need to make. Again, a lot of these types of treatments require time on user but also for family members and caregiver, and also some out of pocket costs and reimbursements are things to consider as well. Some of the devices that we talked to about today are reimbursable by wide variety of insurances and Medicare and Medicaid. Others need to make more of a case but again each individual is different. So we highly recommend that when looking into these neurotechnologies is to investigate what type of out-of-pocket cost there will be as well. Finally, particularly for implanted devices is to be able to have a medical professional monitor you. Both for device and so for instance the IDDS, again, you need to get that pump refilled, but also spinal cord stimulations to make sure you have a medical professional that's monitoring you and your progress, managing chronic pain. But also to have even for external devices is to make sure you're monitoring any peripheral nerve damage and for any skin damage. For instance, particularly for the electrodes on the skin or any penetrating electrodes to make sure there's no skin damage. So these are really consideration to think about before getting into any chronic pain strategy. So I want to leave you with

some further resources that are also available out there and these are a lot of different organizations.

Organizations listed on pain management back sheet but I wanted to go over them briefly with you and great resources for not only medical professionals but consumers that are looking for the resources for managing chronic pain. The American Academy of Pain Management is mainly interdisciplinary organization that's serving mostly clinicians who treat people for pain and chronic pain. They focus a lot on setting standards for care and also for education. So for the medical professionals out there, that's a great resource for you. There's also the American chronic pain association which was founded in the '80s out of a woman that's in Pittsburgh, Pennsylvania, and again, it is a great resource -- educational resource to learn more about pain and categories of chronic pain and now they are class tied. American Pain Foundation Research and promoting research and advocacy and access and barriers for pain management, and they are a great resource as well. The National Chronic Pain Outreach Association, their purpose is to lessen the suffering by people with chronic pain with health care professionals and pain and pain management. Mayday pain project which is an educational online resource for a variety of different types of pain, not just the neuropathic pain that we are talking about today, and

finally the National Institutes of Health, their neurological disorders and stroke division or institute I should say, they have a chronic pain information page that goes very specifically into chronic pain and how to manage chronic pain as well. So with that this concludes our presentation for today about technology for -- for different types of pain management. Again, I wanted to stress to you all the presentation, this presentation, with all the hyperlinks, will be available in a PDF format. It will be available on the Neurotech Network website, which is available for you right in front of you now, and there's a link to it on the home page, and also be able to find us on the spinalcord.org web page as well. The PDF will be available on links. Offer pain management fact sheet on the education page on the website. That goes through a little bit more in depth of what we talked about today, and also offer other fact sheets as well, one for spinal cord injury specifically that we developed with the national spinal cord injury association and last year we also released a brain injury fact sheet that's also available on the website, all of them are available for free, and we have a centralized database where you can look up different types of neurotechnologies, not just for chronic pain but a lot of other neurological conditions and find out what type of technologies are available as well. So if these -- if you are looking into different types of neurotechnology, find a topic that

interests you that you would like to see a webinar of, please let us know and we will be happy to plan some more webinars through the partnership with United Spinal Association and national spinal cord injury association with Neurotech Network and offer those to you. And also again if you're more interested in the topic, please look for an e-mail how to get a free copy of strategies for managing chronic pain and coming to you from New Mobility magazine. We have a few minutes and open it up to be able to answer any questions that might be out there.

>> Speaker: Can neuropathic pain be inflammatory?

>> Jennifer: There's a gray area between those and typically neuropathic pain is a -- it can irritate an area via inflammation. It can. Typically what I would be concerned about, two separate mechanisms happening. Are you having two actually very different types of pain going on that might not be from the same source. So yes, it can be but I would be more concerned trying to investigate two different areas where it might be the cause of the pain.

>> Speaker: I am a disabled complete paraplegic with extensive when in my back and reached maximum of pain management therapy with opiates. Where do I go next as continue to be more sore from wear and tear and tolerance to opiates?

>> Jennifer: I think that's a really good question in terms

of where do you go next. We talked a lot about devices today that might be of options for you. It sounds like you're taking opiates now. Next transition might be investigating IDDS or implantable drug delivery system. Again, you will be able to deliver those medications but the side effects will be much less when it is implanted system. Also spinal cord stimulation might be an option for you as well. Now, that being said with the rods that you have in your spinal cord, I would definitely bring that to attention of medical professional, and they might be able to implant the electrodes above or below where those -- the hardware is in your back and be able to take advantage of something like a spinal cord stimulation system, so again, I would encourage you to go to the support groups for spinal cord stimulation and find a medical professional that can look over your file and actually your sprays as well to be able to see if you're a candidate -- x-rays as well and candidate for that and look into IDDS which might be another option for you.

>> Speaker: On average how much do IDDS cost?

>> Jennifer: You know I don't know in terms of how much out of pocket it costs because when we think of IDDS is not just it being implanted, but it is also the follow-up to get the pump -- the refilled, if you will, so I think that would be a question because prices change more than what I would be able to track and definitely

go to the websites and ask that question to the companies and to a medical professional because there's a lot involved when it comes to surgical implantation, so I know I didn't answer your question directly, but I hope I can go to the resource and get a more direct question -- more direct answer, excuse me, to your question

>> Speaker: Are IDDSs effective for fibromyalgia treatments?

>> Jennifer: That's still unknown. I think it is typically been used for neuropathic pain and I think as I mentioned earlier in the presentation, fibromyalgia is still one of those categories of pain that are very well recognized, so we don't quite know the causes of it to be able to get to the proper treatment. So I think it would be something to explore, particularly with a professional that knows IDDS, and explore that with them, but I think it is still very much in the investigational stage when it comes to treating fibromyalgia specifically.

>> Speaker: What is IDG?

>> Jennifer: IPG, that's what I mentioned. During the presentation I mentioned programmable generator, so that is actually the implanted device that is -- that is implanted into the body particularly with spinal cord stimulation systems. If you remember the spinal cord stimulation slide, there were different types of IPG's on

the bottom of the screens. They look very big in the picture. They're actually very small but those are the implantable generators that are implanted inside the body. Now, they're very much like a pacemaker and very much made out of the same -- very similar materials to a pacemaker, so if anything I would use that equivalent, if you will, to what it is to being implanted, but IPG is really kind of the brains of the implanted system for spinal cord stimulation systems. I also mentioned IPG when we were talking about nerve blocks, the investigational nerve block device also uses an IPG. So again, it is an implantable generator.

>> Speaker: Can you combine TEN's and IDD -- I think it is IDDS?

>> Jennifer: Sure. IDDS, so that will be the implantable drug delivery system combined with a percutaneous neuro-modulation system, and that's a good question, can you combine these types of therapies, and the answer is typically question. Again, I would stress that you be monitored by a medical professional, but it is common to combine different types of treatments. So it is common to combine, for instance, implantable drug delivery system and be able to use a PENS system as well, but again, I would make sure before you start the combined treatment is to talk to your physician or your medical professional or pain doc specifically that is monitoring the case. Also very common to combine

TENS and PENS units with oral medication and that's an option as well. So there can be combinations of treatments. There can be, for instance, some combinations of even using the infrared treatment with maybe some TENS units, so having the combined therapy is definitely a question to ask and definitely something that is probable for you to look into.

>> Speaker: What about hypersensitivity pain, arthritic pain.

>> Jennifer: Sure. We didn't touch on too much about the arthritic pain because very much it is inflammatory pain. Some of the PENS (ph) units can be used for that type of a pain and also some of the alternatives like the infrared therapy might be possible for that as well. The other question was about -- it was arthritic pain and -- I forgot what the other one was.

>> Speaker: Hypersensitivity.

>> Jennifer: Thank you. Hypersensitivity is his something to be careful about when looking into PENS and TENS units because surface of the skin is very sensitive, that's the hypersensitivity, and you might be able to look into some other devices like those with alternatives that we talked about for -- that are FDA cleared like the infrared therapies or the Fisher Wallace device that might be a possibility for you to treat pain. I'm not saying that the TENS and PENS units are completely off limits for people that have

hypersensitivity, I would just proceed with caution if you wanted to look into the option that it might overexcite your hypersensitivity.

>> Speaker: Do these devices prevent MRI?

>> Jennifer: Good question. The implanted device -- so the question is whether any type of device that we talked about today would prevent the clearance of an MRI. Any of the external devices, as long as you don't have them on you when you're going through an MRI, you will be saved for an MRI, no different if you went into an MRI without using the device. If you have an implanted device, that's a different story, and that's something you need to look into. I know with spinal cord stimulation systems they just started to release a device that is compatible with MRI but that's still very new to the market, very distinct question to ask before you're implanted with any type of device, whether you're still eligible for MRI. That is actually an issue for a lot of implanted devices, but I do know for spinal cord stimulation they recently released one compatible for MRI. With IDDS I do not know the answer but it is something to investigate and question to ask if you want to be a candidate for an implanted device.

>> Speaker: Realizing that all pain is individual and people will not respond the same to devices, is there any info on effectiveness of the various devices for

different types of pain?

>> Jennifer: I wish there was. Not that I've been able to find so far. Not been able to find if there's much correlation between category of a pain and treatment. I haven't been able to find that matrix as of yet for a lot that we -- that I have been doing the investigation on it for in term of technology. That might exist, and I would lead you over to some of the other resources that we talked about at the end of this presentation when we talked about the chronic pain -- the Chronic Pain Association or the American Pain Foundation. They may have a sample matrix that's available, but I still haven't been able to find one, but I would lean on the resources and you sparked my curiosity to see if they have a matrix like that, so I think we have time for maybe one more question.

>> Speaker: Can you still be active running, et cetera, with SCS?

>> Jennifer: Absolutely. There's a lot of stories out there, and you will learn when you look into the peer mentor groups for spinal cord stimulation systems that you can become very active or be active with having a spinal cord stimulation system. Now, for those people worked with, very remarkable and compelling stories about how people have been able to get off all of their oral medications by using spinal cord stimulation, but again, I think it is something very much to look into, and

if you're an active person, it might be a very viable option for you. So I think that concludes our presentation, our webinar today. If there are questions that you submitted and were not answered in this webinar, I will have the questions sent and be happy to answer those individually and make sure everyone gets their questioned answered today. Again, thank you for attending the technology and pain management, advances of chronic pain of people with spinal cord injury and disorders and PDF files with all the link will be on the website as well. So thank you so much for attending today. I would like to also remind you that our next webinar with Neurotech Network will be on September 25th, and we will be talking about the experiences with being a participant in a clinical trial. So we look forward to your participation in that webinar as well, and thank you again for attending and we hope you enjoy this presentation.

This text is being provided in a rough draft format. Communication Access Real-time Translation (CART) is provided in order to facilitate communication accessibility and may not be a totally verbatim record of the proceedings.