

Date: September 25, 2013
Event: United Spinal, "Lab Rat"

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>> Good afternoon, and thank you for joining us. Titled becoming a lab rat, lessons learned from participating in a clinical trial. I am Lindsey Elliott, I will be the moderator for the presentation today. Today's webinar is one of several that spinal cord association will host. All of the webinars are recorded and archived. On our website, at www.spinalcord.org. Have you ever thought about joining a trial? There are hundreds of them out there. How do you choose or know what to expect? Today's webinar provides resources to learning about available clinical trials, how to know if the trial is valid. And what to expect by being a clinical trial participant. Today we will gain lessons learned from Dr. Kim Anderson Erisman, director of education at the Miami Project to Cure Paralysis. And Jennifer French, Executive Director of Neurotech Network, both of which have personal experience in these trials. We are pleased to have them to present this topic. At any time during the presentation if you have a question, please, use the question box. That you see on the screen. And to type in the question. We will try to get to all of them at the end of the presentation. But if we run out of time, Jen and Kim will be able to follow up with you, each individually with e-mail that you sign in today webinar for, to answer the question. I wanted to let you

all know too that our next webinar is on November 7. At 3:00. Eastern standard time. And we will be presenting on increasing access to accessible housing for disabled veterans presented by Heather Aimsley. To sign up for our webinar newsletters visit our website www.spinalcord.org. And without further adieu I would like to turn the presentation over to Jen. Thank you.

>> Thanks Lindsey, such a pleasure to be here. Kim and I are excited about this webinar. Before we get further into it. I want to also introduce you to both Dr. Kim Anderson-Erisman and myself. We're both in the field, but also both quadriplegics, so we have been sitting in the shoes of a person living with a spinal cord injuries for many years. So another going to talk to you from a professional standpoint and personal perspective as well. So let's start. We first want to introduce you to our organization, the Miami Project secure paralysis. Our web link there, and this Miami Project is dedicated to finding treatments and cure for paralysis resulting from be spinal cord injuries. That is a hyperlink for you to their website. To learn about them. And I am from the neuro tech network, non-profit that focuses on education and advocacy of neurotechnology devices, therapies, and treatments for people living with impairments and care givers. And paraprofessionals. To let you know, if you do not want to copy down the hyperlinks we will have a P D/F afterwards where you can have the links and go to the website. We have to throw in a disclaimer, so jump through this slide quickly. To let you know the information provided, is not to replace medical professional and you should be able to consult a health care professional for your case. We will be talk about experimental and investigational devices, and drugs, and

biologics, and neuro tech network and representatives we do not prescribe, distribute, rec"American Idol" products, services or devices and we recommend that you take your case to a medical professional. And one last disclosure. For Dr. Anderson she is a consultant for pharmaceuticals and bionics, bio sciences, et cetera. Let's get through this fun stuff. What are we talking about today? So we will go over some of the basics of clinical trials. Some things to know. We'll go a quick overview of spinal cord injuries. We'll be talking about the pipeline of spinal -- clinical trials for spinal cord injury. And also, what is going on right now. Finally round it out with lessons learned from both Kim and I over the years of participating in clinical trials. And wanted to pass on that knowledge to you. So what is a clinical trial? First we have to kind of start off a discussion of what is clinical research. Clinical research is focused on patient oriented research. For mechanisms for human disease, therapeutic interventions, clinical trials, development of new technology. Also, can focus on epidemiological and behavioral studies, and also for outcomes, research, and for health services research. So really clinical research is this kind of big bailiwick. And inside of that, sits something called clinical trials that you hear about so much. Think of clinical trials as a subset of clinical research where clinical trials are focused on a perspective biomedical or behavioral research, if you will. That is focused on a very specific research question. And for intervention. So that's kind of a key point about clinical trials is that it focuses on a specific research question. Also focuses on determining whether something new, or intervention, biomedical or

behavioral is safe, efficient and effective. So those are a few things to think of as well. Specifically for safety. And finally, the long-term goal of clinical trials is really to gain scientific evidence and have scientific basis that will change either health care policy or standard of care as we know it today. So again, that's kind of the bases of what clinical trials can be. So what is the difference between a clinical study and the care you get every day from your medical professional? So there is kind of two key, really important differences between the two. Clinical studies focus on a very specific goal. They are looking to accomplish again to answer that very specific research question. Whereas in usual care, it is really the care, and treatment you get from your regular doctor is focused on care and monitoring of your condition. So it is focused on you, as the patient, whereas a clinical study is focused on the research question. Also, for a clinical study, the very strict protocol. Very strict procedures that they need to go through, to be able to administer that clinical trial. There is really no deviation from those, that protocol. Whereas, in treatments or in care it is much more flexible. Whereas you are treating physician can change around your -- some of how your treatments can go, if you will, to be able to ADAPT to whatever your condition may be. So those are really some of the big differences, between clinical studies and your typical care. Now when I talked about protocols. Some of the basics of understanding a clinical study is really to understand the protocol and the information that they are trying to gather. These are things that you need to look for when you are looking at a clinical study. So one is understand why are they conducting this study. What is the reason,

what is the research question. Who can participate. I will go further into eligibility criteria here in a minute. How many participants are needed. They might have five. It might be 500. You do not know. But that's part of what is available in the protocol information. And what type of tests, procedures, drugs, dosages are going to be administered during the clinical study. How long is the clinical study? Is it for only a month or six months? Or six years? Finally, what information are they trying to gather about the participants. So if you are looking at participating in a clinical trial these types of protocol information are things that you need to know and be able to investigate. In particular, for the information that they are gathering you want to know what type of tests, procedures, drugs, that you are going to take going through. So going back, to talking about eligibility requirements. When you look at a clinical study, they are going to talk about eligibility requirements.

Basically two categories of eligibility requirements. There is what is called inclusion criteria. Things they are looking for for the participant to have. And there is exclusion criteria which are specific items that the participants cannot have. So between those two criteria, that will come together of whether you are eligible to be a participant or not. So you need to meet both of those criteria. Not maybe meet exclusion but exclusion criteria you meet as well that bumps you out of being eligible. Or the other way around. So key thing to remember, of looking into whether you can participate in this specific clinical study. Now, I have a dotted line down there that shows expanded access. There is a provision, for expanded access, that is through the national institute of health. Rare cases. Most of the cases are

for typically see it for instance for cancer, for terminally ill, very terminal cases, but it is an exception to the rule. And there is a very long process to go through but I want you to beware that there is called expanded access. So from here accident I would like to hand it over to Kim to talk more about the clinical trials and clinical trial process.

>> All right. So the graph that you see in front of you, gives you a good overview of how clinical trials proceed. On the far left-hand side, you can see that the -- actually there is a lot of work that goes into pre-discovery, and Jen if you advance the slide one. The majority of academic research centers, are actually focused on pre-discovery and discovery research. And phases of clinical studies. And that's to really identify what works and why is it working? The mechanism. And then, when you find something that is promising, you start going across the screen, to the right. And you go into a Phase one trial. Which is where first testing safety. And that would usually involve a very small number of people. And it would be designed with very strict inclusion and exclusion criteria. As Jen described. Once we know that there is pretty -- there is good safety in the Phase one trial, we can apply and propose a Phase two trial. Which is a bit bigger, and then they will be larger numbers of people, and then usually some -- they are trying to identify what aspects are actually beneficial from the intervention. And then in the Phase three trial this is your largest trial, and this is often called the pivotal trial. Because in this large Phase three trial, typically needs to be randomized with a placebo control. And the study has to demonstrate that there is a clinically meaningful benefit to study participants, from whatever is being

tested. And if that fails, then it cannot go to the FDA as a new drug approval. If it succeeds the Phase three trial does, then the company or organization can submit all of the information to the FDA for approval as a new drug. Once that occurs, then it can go into standard medicine, and into the hospitals and clinics. Jen, if you would advance the slide one more time. You can see with a graphic up on top. That the cost of conducting clinical trials exponentially increases as you go from the pre-discovery research through the Phase three trial. And if we go to our next slide. There is a bit more about that cost. This graph shows you about funding. On the far left side, you can see that the grants are the primary mode of funding for our discovery research. So all the scientists out there trying to discover what is happening with spinal cord injury and how to repair it in animals, that is funded by grants. That's a very well established system. And then if you advance one more time, Jen, over on the far right-hand side, you see that industry, companies like Pfizer, et cetera, will fund the large clinical trials. The in between there is something called valley of death. And that's where it is really hard to get funding. But you really need that critical information in order to actually get approval from the FDA to start a clinical trial. And this is where many, many discoveries from the basic scientists actually get lost in this valley of death. Because it is difficult to find a funding mechanism to get all the final testing needed before you can go into humans. So our next slide, will actually tell us a bit about spinal cord injury. These are examples of humans, spine cords. That were obtained from autopsies, and the red stars show you the three main common types of human spinal cord injuries. And you can

see they are all pretty different. The upper left hand panel A, is what a normal spinal cord looks like without injury. And all the other four are different types of injuries. Now those four types of injuries may have the same functional outcome. The same neurologic outcome. But you can see there is such great variety inside of the spinal cord. That leads to some of the differences that we see between each other, having different, you know, same injury but different outcome. And it leads to variation in clinical trials. If we go to the next slide. There is an animation diagram here, that I can explain to you all the different changes that actually occur inside of the spinal cord. And how they can be different targets for repair, and clinical trials. So first, arrow is pointing to the center of the injury. And that's where we get primary damage. If we have a traumatic spinal cord injury, it is that mechanical damage, either from the car crash, from falling, from diving, from the gun shot wound, that causes a primary damage. You cannot do anything about that, with the exception of prevention and education. But next thing that happens is something called secondary damage. The primary damage triggers a big cascade or avalanche of biological mechanisms inside of the spinal cord. That eventually cause additional tissue damage. That was not originally there from the primary damage. And this additional damage is called secondary injury. And usually it occurs -- starts immediately after injury. But usually after about a month or so, it has occurred, and the damage is done. But we can actually intervene in that period of time, with neuroprotective interventions. So I will tell you about some of those clinical trials in a few slides. Next thing that happens, is that some of these nerves fibers going up and down the spinal

cord, actually get cut, and those individual nerve fibers are called axons. Now their cell bodies may be somewhere else and still alive. So the only thing we need to do is try to figure out a way to get those cut axons to actually regenerate or regrow. Another thing that happens, is that you get this inhibitory scar tissue, which I am sure many have heard about. The scar tissue is protective mechanism by the body, and it is trying to prevent the injury from getting larger. But the site effect of that is when you have a natural regenerative response in your body, it is prevented from being successful by the scar tissue. So another target for repair, is to neutralize that inhibitory scar tissue so we can get regeneration to occur. And then finally, something else that happens, is that you get cell death, there is many different types of cell in the spinal cord. And so there is many different types of cells that need to be replaced. You can see on the slide, those little yellow cells, that are encompassing the purple axons. Those are forming the myelin or insulation around the nerve fibers, so they can conduct electricity. And that's actually a specific type of cell that needs to be replaced as well as many other types of cells in the center of the injury. So next slide, we will talk about some of the past studies, that have occurred. And many of you are probably familiar with methylprednisolone. Steroid that was administered to many individuals, in the 90s and in the 2000's, and sometimes it is still administered to individuals. There is some controversy about whether or not it is effective. Because it can actually cause people to get really sick. Another study that was performed, is called Sygen. GM 1. This is actually a really, really large, very well designed Phase three clinical trial performed in the early

2000's and it actually was considered a failure. The reason why it was considered a failure is because they created their primary outcome at too high of a bar. People had to convert two Asia Levels, so going from a neurologically complete lesion of being an A, all the way to a C. Which is a very significant change. And so it was considered a failure because it did not meet. That but there were actually many people that did benefit from the trial. And another study that was performed is called Gacyclidine. All three in trying to present the secondary damage from occurring so neuro protective studies, interventions. With gacyclidine, this study was done in France and actually not that much information we have gathered from it. And then finally, there was a drug called Cethrin, that was tested Phase one, Phase two trial in the late 2000's. And this actually showed some preliminarily successful improvement in motor function in the people that had cervical injuries. For the thoracic injuries there was no improvement in motor function. However, the company Al sars dropped the plug after the trial and recently the discovery of the drug -- of the individual scientists that discovered the drug, has regained all of the intellectual property from the Al seres Pharmaceuticals and she is trying to identify a company to invest in it, and do an additional trial so that we can move forward with this hopefully for cervical injuries. Next study or next slide, we have cell based clinical trial, using activated macrophage. You may have heard of pro neuron or pro cord trial. Phase one trial done over in Israel. And it seemed -- it only had 16 people involved T seemed to suggest that there was no adverts events, and they were -- it was enough information to lead to a larger Phase two trial. That Phase two trial enrolled

around 50 individuals. However, it was stopped after about 2/3rds of the subjects were enrolled. And it administered the cells. The study was stopped for financial reasons, however, recently there has been a publication of the analysis of the data that was collected. And it actually showed that the experimental group did not show as much natural recovery as controlled group. That's actually a bad thing. Because we all want to get the most amount of natural recovery that we can have. So there is some importance of monitoring intervention. Our next study there, is about olfactory ensheathing cells. Small study in Australia. And it was getting your own olfactory ensheathing cells, so take a biopsy from the olfactory area in the nose, and then they would purify them in cell culture, and then injected them into the individuals. With spinal cord injury. Now they did establish safety in those six people, and there has not been an additional study proposed yet into whether or not they want to pursue that, in larger populations. Next I will hand this over to Jen.

>> Sure. We will go over some of the past studies that have been done from a technology or neurotechnology specifically for spinal cord injury. There was the first, upper extremity, neuro processes, called Freehand system that had gone fully through clinical trials and brought to market. However it was taken off the market in 2001. And the intellectual property rights went back to the Cleveland and SES center. Now at this point, those that do have the implant, can still receive maintenance, and it is available from a research perspective through the Cleveland and SES center. Another study done for bladder control systems. And that has gone through, again, through Cleveland clinical trials and brought to market. There is several devices that are available on the

market today. There is the Interstim Finetech, Brindley, VoCare system, available over in Europe. And then urgent PC by Uroplasty. Examples of bladder control systems available and have been brought through clinical trials. There is respiratory neuro prosthesis. This went through clinical trials and brought to market. Three types of devices. Some are what is called diaphragm pasting. And some are phrenic. So it is the same basic devices being able to allow people to breathe independently but mechanisms and how they implant the electrodes are different. So there is the Mark IV from Avery Labs, Atrotech from -- AtroStim from Atrotech. And finally the NeuRx DPS from Synapse medical. Drop foot stimulation is very popular. It is reimbursed here in the U.S. for incomplete spinal cord injury. Again they were brought through clinical trials and brought to market. There is several different types of devices on the market. For instance, L 300. WalkAide from Innovative Neurotronics. STIMuStep, is Finetech available in Europe. And Odstock OFS device, which is available on the market in Europe and Canada. But not available in the U.S. on the market as of yet. And finally there is the oscillating field stimulator. It went through clinical trials and went through the FDA required more information. For them to continue with their humanitarian device exemption. However the study was stopped by the company. And halted. And at this point, the property for that technology went from Andara or, Cyberkinetics, to a company called NeuroMetrix. At this point it is unsure of where that technology will go. So now I would like to hand it over to Kim, to talk about some of the current studies going on in the world for spinal cord injuries.

>> So these first three studies I will

show you on this slide. Are all neuro protective intervention. And they are proving to be promising so far. The first one here is Riluzole, and it is currently being in a Phase 2/3 study that is very large multi-center trial. To start to look at efficacy. Phase one study finished and there were no major safety issues. So that is very important. And as we get the -- offer the next year or so, study is conducted we will find out about how much of an improvement Riluzole can initiate. The next is involving a drug named Minocycline. Similar to the Riluzole trial. Administered early. It has been conducted up in Canada. And Phase 1/2 safety trial has been completed. And it is pretty promising. There is no safety issues so far. And they are now planning to start a Phase three efficacy study. And you can see this involves a large number of people. Final one, for the neuro protective. This is just the main ones I am covering. Also some more that you can identify in our later resources. But it is with therapeutic hypothermia. And done at the University of Miami. And a Phase one safety trial is ongoing, and there is preliminary efficacy for individuals with cervical injury. And they are in the planning phases of getting funding for a Phase two multi-center trial. And our next slide is going to talk about some of the cells therapy trials. So you may have heard about the human embryonic stem cell trial. That was being conducted by a company called Geron. That was a Phase one safety trial using embryonic stem cells that were designed to eventually replace the lost insulation on the nerve fibers. So the lost myelin. And that was a strict inclusion, exclusion criteria. Because using embryonic stem cells is much more dangerous than testing a drug for neuro protection. Now, these individuals had to

have the cells injected within 14 days of their injury. And they had a needle inserted into the spinal cord for the injection. Now because they were also on immunosuppression, to prevent the cells from being rejected, with by the body because they are not your own stem cells, they actually enrolled five of the 10 individuals, and then the company halted the trial for financial reasons. And the technology is now being acquired by another company, so we may be able to see a resurgence of this technology. The other one, that I would like to talk about, involves human Schwann Cells, conducted down here at the University of Miami. With Miami Project. And this is also a Phase one safety study. So it has strict criteria. And we have to enroll individuals within five days of their injury, so that we can actually get a sample of their own cells. Then we grow those cells for several weeks, and then we do an injection into the spinal cord. So because we are using the individual's own cells, we don't have to be on immunosuppression medication. So far we have enrolled two out of the eight people. Next slide. We have another stem cell trial. That is ongoing for a bit later in injury. Individuals that are three to 12 months post injury. And this is being done using human fetal stem cells. And again you cannot get these from your own body so those individuals have to be on temporary immunosuppression. There is a thing done over in Switzerland, and they have recently gained approval to open up a site in Canada. And so far, the study has enrolled four of the 12 individuals. And they are taking a bit different approach. They are enrolling complete injuries first. And then incomplete injuries in different stages. So that will give us more information about different populations. Then the final stem cell trial is using

these human fetal spinal neural precursors, that are also not from your own body. And they cannot always get these stem cells from your own body. This is also Phase one trial. But this is going to be for chronic injury. For individuals that are one to two years post injury. And this will involve injections of the cells into the spinal cord. Several injections of the cells. And now, I am going to hand this over to Jen for some current studies with devices.

>> Sure. There is a lot of studies going on right now that involve devices, and some of the either secondary conditions but also due to paralysis from spinal cord injury. First one is the transcranial direct current stimulation. And that is being conducted for chronic pain. So any type of chronic neurological pain. But also they are also testing neuroplasticity. So taking newer injuries and using this to see if they can regain some motion in the upper extremity. The next one is called repetitive transcranial stimulation. This has been used for quite some time for chronic pain. But they are also doing some latest studies on -- to see if they can help in terms of the rehabilitation of hand to motor function. And also for the treatment of spasticity. Related to spinal cord injury. The next one is also an external. All three up here are external devices, so far. And the complex motor stimulation is a non-invasive surface stimulator. For functional electrical stimulation. They are doing some studies again in terms of regaining some upper limb function. Gross upper limb function in your arm, shoulder, and forearm and wrists. That study is again ongoing. And there is also a study going on for FES cycling and rowing. We know FES cycling is a device on the market and there continues to be study in terms of how it impacts what

the procedures can be able to improve health further. And there are ongoing as well as looking at FES rowing. And treadmill training and exoskeleton. Those are two other devices that have been used in the clinic, and also are focused on gait retraining. Several types of devices out there. Also a whole array of studies going on. May have heard of brain computer interface. That study, there is a few studies that involve spinal cord injuries specifically. That is mainly for control of environmental controls. Such as lights, doorways, if you will. And also, for control of upper extremity, linking it to functional electronic stimulation and linking it to robotic arm as well. And there is several studies going on in terms of implanted Neural Prosthesis. New array, from cough, hand grasp, arm and shoulder movements, for trunk and posture control, standing and walking. So there is a wide array, and all of their inclusion, exclusion criteria are gaining for -- are different. There is a clinical trial starting up soon involving the network Neural Prosthesis. Another implanted neuro process these but a different mechanism than implanted Neural Prosthesis used. First implants will look at gaining or providing four different types of function. For upper extremities, bladder, cough, and trunk control. And finally, a device study that is going on and ongoing is epidural stimulation. Mainly for standing. And that is ongoing trial, and again very specific inclusion, and exclusion criteria. So those are a lot of the studies going on, right now. In terms of devices. And now what we would like to go in to is some of the lessons that Kim and I have learned over the years of being participants in clinical trials. Both of us have partaked and been participants. So we have been the other side of the coin of

being involved, and of various types of interventions. Some of the lessons I like to show to you is that, you know, the research actually takes a team. And when you join a clinical trial you become part of the research team. Your role as a participant is to be able to follow the protocol that they give you. But also to give as much feedback to them as possible. And you might work with one or two people, in a trial, but realize that there are a whole array of team members behind that, to make that trial work. So it is not just the people that you are interacting with but a whole array of people as well that are involved, in making a clinical trial come forward. Finally, you know, collecting data is serious work. But you can have fun with it. So sometimes, days in the lab can be very boring and very long, and sometimes you want to be able to have fun within the time you are spending there. But also be well aware that the collection of data is very serious. And you also need some patients. All clinical and experiments do not go as planned. This picture was taken in a motion lab. Where I was working with Neural Prosthesis and we could not get the cameras to work. And we spent several hours, in the lab, trying to get the experiment to go off. So you really need patience to understand that they are collecting data and trying to collect the best data possible. Another lesson I learned, that I learned along the way is that you really need to read the fine print. One of the things that you should have, before you join any clinical trial is something called informed consent. And some of these informed consents particularly for complicated trials, will have pages and pages of documents, and it looks like a long legal document. But I encourage you to take it home, read it. Read it twice, if need be. To understand completely what

your rights are, when you become a participant of a clinical trial. But also what the risks are. So it is really important to understand the fine print of that is involved in these informed consents. And you need to be able to read them and make sure that you do sign an informed consent before you agree to participate in a clinical trial. Also, understand your commitments. So when you are committed to a clinical trial and you make a commitment. Again we always talked about the protocol. That exists. And you have to understand the schedule that you need to keep. To be a participant. What your time commitments will be. What your financial commitments will be. And also the commitments of your loved ones. Your caregivers. Family members. Your friends. To make sure that you follow the protocol of this clinical trial. That should be laid out in the informed consent. And finally, you want to manage your expectations when you go into a clinical trial. I will say sometimes, I have gone into a clinical trial expecting a bit more than what I could -- than what I get out of it. This is a picture from the last upgrade that I had. I was expecting to be getting up and around on crutches independently. I am not there yet. So it is a matter of being able to manage your expectations, when you are involved in a clinical trial to make sure that your expectations are equivalent to what has been said to you. Now, hand it over to Kim on some of the lessons she has learned along the way as well.

>> Yes. So I have actually had a different experience than Jen. And I was involved in what was technically not really a valid clinical trial. Back in the early 90s, there was surgical procedure going around called the omentum transposition. You can see the little diagram of it up there on the screen. Omentum is just a highly

fatty tissue around your intestine. And it can -- concept, if you go to the next slide, was to take that fatty tissue and leave it attached, stretch it up, and put it over the spinal cord. So it was over my cervical spinal cord injury area. And the concept was that it would be able to supply blood and other biological material, like neurotransmitters, and growth factors and things like that, to give new source of nutrients to the spinal cord injury site. I was not very well informed at the time. And was actually a procedure that was done in the United States at a United States hospital. And I thought that that was a valid and a approved trial. It turns out that it wasn't. And if we go to the next slide. I would like to share the lessons that I learned. First, I would have to say, thankfully I did not receive any negative affects from the trial. But there were friends of mine that participated that did have negative affects. From the trial. And be aware of trials that are unapproved. Even in the United States, just because U. S. doctor is doing it, does not necessarily mean that it is legitimate. And as mentioned by Jen, there is a big time commitment that you are being required to follow. You should have a lot of follow-up, and you should have a lot of information provided to you. Next thing I would like to say is really do your research. I thought that I was well informed at the time. But really get a second or third opinion from a research center or a hospital that specializes in spinal cord injury. And when I say current spinal cord injury. People that are on top of all the latest things that are happening. As I mentioned previously. There is a lot of clinical trials ongoing. So it is not like there is nothing ongoing for spinal cord injury. There is a lot out there. And there are experts out there that can

help you navigate the decision process. And then, finally, never pay for an experimental treatment. If you come across something that is asking you to pay anything, five, 10, 15, \$20,000, for an experimental treatment, that is a big red flag for you. Because it is experimental there is still significant risk. And it is unethical for researchers to charge people money for risky, or unknown risk, treatments. And then, finally, expect follow-up. Expect that you are going to have to make a commitment to the researchers, for significant period of time, you know, if it is probably going to be, at least, a year you are making a commitment for follow-up. And if you see something that is telling you can come and get a procedure, and all you have to do is stay for maybe a couple of weeks and you can go home. You never hear from them again. That's another big red warning flag. So we have some other concerns in our next slide. About risks of unapproved trials. If you can advance the slides, Jen? In our next slide, we have risks of unapproved trials. And some of them can be increased, and long lasting pain. Or muscle spasticity. Believe me, it can get worse than it is. If you have not -- if you do not have pain or you do not have spasticity and you get intense pain or spasticity that could ruin your day. And another thing that can happen is you can have further loss of function. You can -- which the next thing is it can lead to increased disability. Who wants that? I don't want any more of that. And another worse outcome is that you could have medical complications or death. And the FDA requires evidence that complications are minimal. That's why we start out in Phase one safety trials. And then we slowly progress to Phase two and Phase three trials with more people. We are measuring what are the complications and how do we

minimize them. And then another thing that can happen is that if you get an unapproved treatment, you can actually lose health care coverage, for a complication that occurred because of that treatment. And then finally, most importantly. If you get unapproved treatments, for example, like what I did, or for unapproved stem cells, then you could be excluded from future valid spinal cord injury, clinical trials. Simply because we do not know what the interaction will be. And then our next slide. We just want to give one word of caution, about stem cell tourism. But there is something called medical tourism been around for years and years and years. And you can see the picture of this snake oil promotion down there. What this is is a form of medical travel to purchase unproven therapies, and in relation to stem cells unproven stem cell based therapies. Unproven treatments hold risk for individuals. And we do -- our next point is that there is no evidence yet that stem cells have a reparative affect on the critically damaged spinal cord. So if we do not know there is a proven repair affect it is experimental. Still testing it. And along with that, unethical to charge people as I mentioned previously for unproven risk laden medical intervention. It should be free to you. And be aware of the individuals out there, that are selling hope for money. Now this is not everybody. As you saw, on the first half of the presentation. There are valid clinical trials out there. But be aware of other individuals that are selling hope. And also, final point, is be aware, if there is no oversight of the trial, no reporting, to the FDA or to other similar regulatory bodies and other countries, that is very, very, very important. Because it is about your safety. So there is -- our next slide, there are sample questions that you

can ask, and we'll tie it up here quickly for your questions that you can ask us. Here are some examples of questions that you can ask. Researchers, if you are considering being in a clinical trial. And the next two slides show more examples of questions and our final slide, shows a resource about experimental treatments, and what you should know. And all of those questions and those tables, are in that resource. Which you can download. Download the website given there. And then I will hand this over to Jen for one final mention. Then open up for questions.

>> Thank you. The other two resources that we are giving you on the slide is one key one that we have actually referenced a lot during this presentation. And it is clinicaltrials.gov. It is a website that is available, and provided by the national library of science and institutes of health. You can go on there, search for clinical trials that are currently available. Those that are recruiting and those that are not recruiting. And it also does not include just clinical trials in the United States. It includes trials around the world. So it is a really great resource for you to go on and find clinical trials. But also to learn more about the basics of clinical trials to be aware if you want to become a participant. And finally, there is a link to our first book that we published through neurotech network. It is a story of my journey as being a clinical trial participant of using neurotechnology and the experiences of being in it. All been chronicled in the book. Sales of the book all go to -- or proceeds of the booking to Neurotech network to continue our education efforts. So from this point, do we want to hand it over to Lindsey and like to address any additional questions that might be out there.

>> Thank you both so much. We have got

some questions coming in. And I am going to start reading them off. If you have them, you know, please take this time to chat us in the question box, and we'll try to get to your questions as well. So the first one is I am paraplegic spinal cord injury T5 looking to be part of a study to help me walk again. I am an incomplete injury. How do I start to look and where?

>> Good resource that is provided right there is clinicaltrials.gov. Is probably one of your first sources to be able to find what type of clinical trials are out there. And there is a -- there is some tutorials on how to search it, but again you can search for spinal cord injury, and you will be able to find a lot of those clinical trials that are out there. Kim, anything else?

>> I would say that is the best resource to go to first. Search on spinal cord injury. And then you will see everything that is out there.

>> Thank you. Next question is does the drug company doing a trial cover all the costs? If you have a reaction do they pay for hospital bills due to a reaction?

>> So usually what happens, is the drug companies will pay for that. All expenses for the procedures, and the tests, and if something happens for the medical complications. However, that is where it is super, super important to read the fine print. Of the informed consent document. That Jen was mentioning. There is required information in the informed consent document, about who is responsible for the payment, if an injury does occur. So if it is not involving a drug, it is just, you know, an exercise intervention, for example, then you may be responsible for any medical expenses that occur. But it is based on risk. So if it is something that is very risky, being conducted by a drug company. Then they are most likely going to be responsible for the complications.

>> Also, another financial thing I would like to add as well to what Kim mentioned. Is that this will also be in the informed consent, and whether or not your travel will be reimbursed or not. So you might have to take on the financial expense of traveling to the site. To and from sites. So again, the informed consent will lay that out for you. To know whether you need to take on that expense or not.

>> Great. Thank you. And the next question is how did Jen, you or Kim, find the best trial for yourself? What was the steps that you took to get to that trial?

>> Sure. I think both of us could go on our experience. But I will start off quickly. I was first implanted. Found a clinical trial back in 1999. And I did my homework. I actually searched out. I used clinical trials.gov. To find this clinical trial. And then I went beyond that and did a lot of my homework. I actually looked into the center. Had -- be talked to my own physiatrist to see if it was a good trial and financial backings. I wanted to know how this research center was funded. So I did a lot of my own homework. That's how I found them. So I went off searching. I used clinical trials.gov. How about you Kim?

>> So, I was in an approved trial, and in 1992. So a bit earlier. And actually I didn't have internet access, or any resources like that. So I was actually limited in interactions with the particular group of people that I learned about this from. And so what I learned from that, and now, with the power of the internet, is really do your homework. Reach out on the internet. Reach out to other researchers, at different universities, or things like that. And resources like United Spinal that can help you to connect with people. Really do your research. Because if you don't, then you are left with only the

minimal information that maybe given to you, if it is an unapproved trial.

>> Great. Thank you of. Next question is, I guess, somebody noticed in the presentation, you know, the verbiage of clinical trial and clinical study. Is there a difference, or the same thing?

>> We, in this presentation, we use them interchangeably. Between a clinical study, and clinical trial. I think, biggest difference for people to understand is that clinical trials are really kind of a subset of all the clinical research that happens. And so when we -- in this presentation we basically use study and trial interchangeably. So thank you for pointing that out.

>> Somebody is asking are there any aspects of the ACA that will impact clinical trials either positively or negatively?

>> ACA?

>> Yeah, I am not sure either.

>> I am not sure what that is

>> If you can tell us what ACA is in your question, we will be able to come back to that question. Affordable care act, Obamacare.

>> Well, clinical trials are as described earlier, are done prestandard of care. So once something -- so everything that is done in a clinical trial is referenced. So it is not typically not everything will be covered under insurance. If you have it as some things that are standard of care associated with the clinical trial. For example, if you had a brand new spinal cord injury, you go to the hospital. Right? You have acute care. If we do a clinical trial at the same time then your acute care is paid for by your insurance. Whatever means that is. And the trial procedures are paid for by the organization or the company.

>> Do you want to add to that Jen?

>> Yeah, I think, that's a big -- big

distinction that Kim had just said and we mentioned that early on in the presentation. The difference between a clinical trial and your standard of care. So the ACA or the affordable care act is really mostly focused on the standard of care. And the treatments, and center of care. Rather than clinical trials. So that's a big distinction between those two.

>> Great. Thank you.

>> The next question is what other countries offer clinical trials and how do we know if they are approved?

>> There are many trials on going in Canada, in all over Europe, and in England and the UK, in Australia that are for sure off the top of my head legitimate. But that resource, on clinicaltrials.gov, will tell you about clinical trials all over the world, and in order to be registered on there, they get reviewed by individuals. That are working for the national library of medicine. And national institute of health. So they have to be -- they go through a vetting process to make sure that it is a legitimate trial, before it actually gets posted on there. So once it is on there, that's a pretty good resource to trust.

>> Just to add to Kim's point. When you search clinicaltrials.gov. One of the means of being able to search their database is to put in the location of where it is. Of whether it is in the United States or in other countries. So that's another means, if you are looking for a trial in a specific country you are able to search by that as well.

>> Wonderful. Thank you. That answers another question. I think we're just about done with our hour here. So I want to thank you both so much. On behalf of national spinal cord injury, thank you doctors. For sharing your personal experience and your professional knowledge

with us today. On stem cell research. Clinical trials, studies, and hopefully everybody learned something that you did not know prior to the webinar today. So again, thank you both so much. And I want to remind everybody again, our next webinar is on November 7. 3:00, eastern standard time. You can sign up on our website at www.spinalcord.org and go there to get our newsletter, sign up for webinars in the future. And we will be discussing increasing access to accessible housing for disabled veterans. Thank you all so much. Thank you again Kim and Jen for that wonderful presentation.

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