

Management of Visual Symptoms

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[00:00:04] **Dr. Peter Sguigna:** So, I was asked to give this talk on the management of visual symptoms and I wanted to start with a quick story/introduction. So, visual symptoms are very common in a lot of these disorders so I think it's a fantastic topic to talk about. And when I was asked about this, a certain story came in my mind of a woman with NMOSD, who had quite a remarkable story.

[00:00:37] Very high functioning, high stress job and then was affected by optic neuritis and accumulated a lot of vision loss in her journey. And as she was picking the pieces back up together, she had asked me about a low vision specialist and I had to admit that I didn't know a whole lot about that space. And so, she did her own research and came back for another clinic visit and told me about Dr. Cummings here, who's sitting next to me, and said that her visit with her was a life-changing event.

[00:01:12] So, when I was asked to give this lecture, I actually knew exactly who I wanted to give it with and I have to admit I'd never met Dr. Cummings until just right now. So, I think that's another testament to an organization like this where it's trying to bring the community together because together we are stronger.

[00:01:32] So, this is going to be a very, I would say, casual lecture; feel free to interrupt us and ask questions and we try to make it as visually accessible as we could. But again, I think auditory is a great way to communicate as well. So, if you have a question, please raise your hand and we'll try to get a microphone to you so that those who are remote can participate in as well.

[00:02:04] **Dr. Kory S. Cummings:** Thank you very much Peter. I'm so glad to be here, I really am. I love seeing a group of people that all combine and have lots of different ways of helping these patients.

[00:02:19] **Dr. Peter Sguigna:** So, I think we'll get right to it and I'll try and stay on time. So, when it comes to vision, visual symptoms are really common if not mandatory in a lot of the diseases that the SRNA identifies with. Conditions such as idiopathic optic neuritis, NMOSD, MOGAD and ADEM. And a lot of times when we talk about visual symptoms as neurologists and ophthalmologists and optometrists, we think a lot about the optic nerve and part of that is based on history.

[00:02:57] And it's not the full story but when it comes to how we think and how we participate in care, it makes a big difference. And vision can be affected by multiple parts of the visual system. So, it's not necessarily just optic neuritis. There's actually a lot that goes into vision and it spans a number of different spaces in medicine. And this is how I think about vision. And vision is quite complex and this is essentially only half of it but this is probably where we spend the most time thinking, at least on the neurological side, about how these disorders impair vision.

[00:03:45] And we call it the afferent visual system because it's how light gets transformed into electricity and then gets processed into the brain to give us vision. And so, this is the diagram in a way. And so, as light goes through the eye, in a very complex organ called the eye, which I've simplified as a box. Goes to a certain part called the retina. There cells will change that light to electricity and send it back through the optic nerve and it'll go back about midway through the brain to a certain part of the brain called the lateral geniculate nucleus.

[00:04:26] Well, it will be processed further and then sent back even further back to essentially the most back part of the brain, something called the occipital cortex and that's where we think and most of what we understand about vision takes place. And again, for the most part, a lot of the disease or at least a lot of the inflammation that takes place in a number of these disorders occurs right here in the spectrum so what we call the optic nerve. And when it gets inflamed, that is what we essentially attribute to optic neuritis.

[00:05:02] And there's probably two if not three stages of recovery from something called optic neuritis. So, we think in optic neuritis a certain part, which is shown diagrammatically here, of the nerve gets inflamed so the immune system gets in there and does the damage. And that inflammation we treat with a variety of different therapies to reduce and there'll be a plateau where the inflammation that was present will no longer be present and then the healing process takes place.

[00:05:39] And there's probably two separate mechanisms that take place. One is remyelination, which for a long time we didn't think took place, but now there's pretty good evidence that it does take place. It's probably time limited, but it probably mediates some of the recovery that we see in optic neuritis. And then there's another one that has a number of different names. I like the term adaptive neuroplasticity and what that is, is there's going to be nerves that have survived the optic neuritis and what they'll do is begin to pick up the slack.

[00:06:12] And you'll see other parts of the circuits coming together to improve vision and that probably mediates a good chunk of the visual recovery that we do see in optic neuritis. And this is just another diagram that I stole, or borrowed I'll say, from a famous medical textbook and it's basically a good illustration of the entire process from the eye to the optic nerve to the lateral geniculate nucleus back to the occipital cortex. And we focus a lot on the optic nerve, but I show this case just to illustrate that it's a system.

[00:06:56] And then this is a case of a gentleman I saw who was told he had optic neuritis, though his history was a little bit confusing and he was very eloquent and well spoken. So, he's able to give us a couple hints that maybe the optic nerve wasn't the issue. And so, we were able to obtain an MRI and what is shown by a few arrows here is that he actually didn't have inflammation in the optic nerve. He actually had inflammation in the occipital cortex and of different parts of the brain that involved in visual processing.

[00:07:32] So that was probably the explanation for his vision difficulties. And actually, this is a gentleman who ended up fulfilling criteria for MOGAD. So, when it comes to MOGAD and a lot of these other rare neurological diseases we're still learning quite a bit. And so, we try to keep an open mind of the entire visual system.

[00:07:55] And optic neuritis again, we focus mostly on our history and when we're talking about optic neuritis, there's of course the vision loss which in a way is a prerequisite to the diagnosis. And at least if you go back

in history, it has to be something that is measurable. But there's actually a laundry list of things that are associated with optic neuritis. Pain, particularly with eye movement is a classic prerequisite, but again it's actually not present in most people without neuritis.

[00:08:29] And there's a lot of other things that can occur that have fancy medical terms which I listed essentially because a lot of these get put to the side when people come to their clinician for the evaluation. Not because they're not important but because they don't necessarily have as great of an impact on how we make decisions. I thought that was my halfway marker.

[00:09:13] **Dr. Kory S. Cummings:** Me too. I started panicking.

[00:09:14] **Dr. Peter Sguigna:** I was freaking out. That's probably a good part for me to stop talking and see if Dr. Cummings has anything to add.

[00:09:25] **Dr. Kory S. Cummings:** I love this, I really do. So, I feel like Peter has to be in the nitty gritty with them. And when my patients come to me, I'm the complete opposite. They're always like, "Do you want to see all of my documents, all my records?" And I'm like, "No. I just want to sit here face to face and know I'm the problem solver. What are you struggling with? I can't make the visual disturbances like these go away but how can we work around it?"

[00:09:47] So we really try to strategize on specific tasks. This patient he's talking about, she was high, highlevel, very successful. So, for her we had to get her computer system completely set up and user friendly and accessible for her. So, I can spend a full hour one-on-one picking up the problems, figuring out how we can do what they want to do more successfully and stay independent and give them the freedom to continue to do the things they love to do.

[00:10:22] **Dr. Peter Sguigna:** And when it comes to vision, there's a lot of things and again, one of the other reasons I listed these is, you may feel uncomfortable even bringing them up. And so, when it comes to vision, there's a lot of symptoms that necessarily aren't in the textbook but are very well described in part of the disease. So if anything, it might be giving some of these folks a little bit of comfort that what they've experienced has been experienced by others.

[00:10:55] And optic neuritis itself can be sometimes quite subtle and part of the reason that we think that is, is you may have optic neuritis but not be that visually impaired. And so, the diagnosis is sometimes delayed, even people with diseases such as NMOSD, because there's a lot of potential for recovery in optic neuritis. And so, if the inflammation doesn't affect at least half the optic nerve sometimes unless the clinician is very keen to evaluate for optic neuritis, they may have normal testing by a number of different testing tools used by optometrists, neurologists and neuro-ophthalmologists.

[00:11:36] So it's sometimes subtle but sometimes not so subtle. And it's hard to give a lecture on optic neuritis without going back to share how we think about this. And a lot hasn't really changed since the late '80s and early '90s, something called the optic neuritis treatment trial. And that's a study where basically the entire United States came together in a clinical trial to say, "What is optic neuritis and what's the recovery trajectory?" And a lot of what we know about optic neuritis and even what's been extrapolated to other demyelinating diseases has its foundation here in this publication and we're still talking about it.

[00:12:22] So it was done or finished, I would say, in the early '90s and there's still publications every year that are based on this data. And this is a curve to show what is the typical recovery from optic neuritis. Now typical is a tricky word, but it took people 18 to ages early 40s that were quick in onset. I think it had to be

within 10 days of the actual optic neuritis and they gave them either steroids through the IV, an oral steroid regimen which is essentially equivalent to a Prednisone dose pack or a placebo.

[00:13:02] And the assumption was that they could improve, that the IV steroids would be better than either the others. And the results are still debated to this day. But at the end of the day, there was an argument on both sides that there was really no impact, either no impact or slight impact on the long-term visual outcome. Again, one of the things that came with this study actually and one of the big arguments for the use of IV steroids is, IV steroid seems to do a better job of preventing a second attack in the follow-up.

[00:13:40] And so that's actually one of the reasons that IV steroids are sometimes preferred over the oral steroids. And again, oral steroids, there's a number of different doses. People have done all sorts of studies. So we, including myself, sometimes use high dose oral steroids which is not on this clinical trial and the reasoning is completely different. And I had to have at least one slide with an illusion and really to illustrate that vision is a light, quite complicated. So, it often requires multiple providers all working together to sometimes find visual disturbances and what the cause is.

[00:14:25] I'm going to, in the interest of time, move through these slides quickly. Symptom management, I wanted to separate the acute phase and the chronic phase. Acutely, I've got to focus on optic neuritis because that's what most folks with these diseases struggle with. We use a variety of different therapies and really the motivation in this space is to get rid of the inflammation in the hopes of better long-term visual recovery.

[00:14:59] Depending on what we think the underlying diagnosis is, we may use one versus the other versus combination therapy. And this is an individualized decision that could probably be its own hour lecture but I wanted to include it. And this is another thing that's still debated to this day and has its foundation back in the optic neuritis treatment trial, which honestly hasn't changed over the last decades.

[00:15:28] But this is something that I think is going to be redone here because we know that not everyone is the same. When the optic neuritis treatment trial was done, we didn't have an Aquaporin-4 antibody or a MOG antibody. And so, people have made arguments that we need to be more aggressive with the diagnosis and I'm excited to share that this is probably something we're going to further define definitively in the future.

[00:15:58] And then we focus on the chronic phase. And again, I think when it comes to the chronic visual difficulties, you need a team. And there's neurologists often, there's neuro-ophthalmologists, if not an ophthalmologist and then an optometrist. And for neurologists and neuro-ophthalmologists, they think about vision differently. So, an ophthalmologist themselves will often focus on the eye and they're not as well in tuned often in terms of the optic nerve and what goes on with vision within the brain.

[00:16:28] So the neurologist and the neuro-ophthalmologist have great communication so much so that there's a field combining the two, what we call neuro-ophthalmologist. And sometimes they're neurologists and sometimes they're ophthalmologists. But it's sometimes good to have both. And then you have an optometrist and in fact there's this other field, what would they call the low vision specialist.

[00:16:54] **Dr. Kory S. Cummings:** Correct. I don't know why, but there's not a lot of low vision practicing optometrists literally in the world. We have a vision forum that meets once a year in February and it's low vision doctors around the world. In Texas, we have maybe 15. I don't know why it's just this little sub-specialty of optometry that allows an optometrist to slow down and really pick apart what the patient's needs are.

[00:17:20] And what he has been talking about, the visual symptoms like the light sensitivity, the lack of vision, it could run the gamut of they have fine vision, but their photophobia is so severe they can't come

into my office without two pairs of sunglasses on. So, a low vision optometrist will sit down and pick apart what actually is going on with them. And it's such a different exam. It's a very slow exam. Nothing's done by computers, it's all done by hand. Very England-ish, and in England they still do everything by hand.

[00:17:55] It just allows us to slow down, watch the patient's head, watch the patient's posturing. A lot of times they can't even go into a regular chair, so we can just bring the exam to them and figure out is it a glasses issue, is it a light sensitivity issue, is it a prescription issue? Everybody just wants a pair of glasses that will make things fantastic and that's rarely the case.

[00:18:16] Then we have to go into the tools. It could be as easy as hand magnifiers and telescopes, up to I just had a piece of equipment in my office this week that was upgraded to AI technology and so the glasses are video glasses and it can take a picture and summarize what they're seeing or what they're reading. I did it with a news article and it completely summarized the article within about 10 seconds. So, I think there's just a ton of great things out there for that low vision spectrum of it. There's just so few of us out there doing it that it's tricky finding us.

[00:18:55] **Dr. Peter Sguigna:** And I wanted to spend maybe two minutes talking about these other issues that patients with optic neuritis or inflammation within the visual system can experience. And again, I think I wanted to emphasize these because clinically a lot of the times these are put to the side not because they're not important but because they won't necessarily affect the acute treatment.

[00:19:21] But as you transition from the acute to the chronic phase, these actually can be quite severe and disabling in their self. And so, I think there's room for therapies. And it depends on an individual basis whether we think this pain itself is residual inflammation or just from the lesion itself. And people have used either medications or things outside of medications for disability reduction and pain reduction.

[00:19:58] So people have used all sorts of things. In my own experience, we've used a number of different therapies actually that are more targeted to migraines, and they actually become quite effective. And avoiding triggers, neurostimulation devices and simple refraction, which is oftentimes not so simple, can actually be incredibly relieving to patients. So don't be shy. A lot of times if you're with your clinicians, if this is impacting your quality of life, there's options.

[00:20:34] And photophobia itself again you would get overall given another 30-minute lecture on this itself. It's sometimes a quite severe problem with a good fraction of these patients. And again, it depends on what we think the underlying cause is, but there's treatments for this and in fact people have spent their careers trying to alleviate photophobia and there's interesting things that are not necessarily only limited to medication. So, there's options but we always encourage people to talk to their providers and whether they think this is going to be a good idea for them.

[00:21:12] **Dr. Kory S. Cummings:** Totally agree. It could be a difference in the color of the filter. We have all kinds of different filters at my office. It can be the color, it can be the density. We can even fit patients in sunglass contact lenses. There's one company that has different gradients of contact lenses. So, a patient of mine will use one for when she's inside and one when she's outside that gets darker. And that's going underneath her one or two pairs of sunglasses. So, it can be very extreme.

[00:21:44] **Dr. Peter Sguigna:** I wanted to quickly mention this one term that's called palinopsia and sometimes I call it a visual shadow. It's actually quite well described and attributed to optic neuritis in a fraction of people. I wanted to put it up there mostly to share that this does happen and sometimes can be severe. This one is trickier to treat if it becomes particularly disabling, but oftentimes this actual transient will go away with time.

[00:22:16] And there's a variety of things that have fancy medical terms that are basically things that can happen in people with optic neuritis and inflammation throughout the visual system. So, I put them up there as well as their illustrations really just to show people that you're not going crazy.

[00:22:36] These are things that are known to happen in optic neuritis whether it's phosphenes or other entoptic phenomena like Moore's Lightning Streaks or Blue Arc syndrome and Purkinje trees which are sometimes induced by prolonged light stimulation. So again, these are all things that are actually quite well described and they can be quite discerning and in particularly those who have sun vision loss. Dr. Cummings was sharing her story there.

[00:23:11] **Dr. Kory S. Cummings:** Definitely. The Charles Bonnet syndrome, I always ask patients who've lost vision quickly because this can happen. I'd say on 50% of my patients. But they're real nervous to admit it because it sounds like they're crazy. So, if there's a family member in the room with them, I could see they want to tell me something but they're looking at them and I'll say, "It's ok." My patients have said there's flowers all over the walls or there's bicycles all over the highway or there'll be a tiger in the corner of the room."

[00:23:36] That's just a phantom vision that's temporary while their brain is trying to process this loss of vision. I tell them if you're right-handed and you have your right hand cut off, your fingers will still feel like they're itching when your fingers aren't there. That's how I describe it to the people that their brain's trying to figure out and it will settle down. I mean, you're the brain expert, would you? How does that work?

[00:23:58] **Dr. Peter Sguigna:** That's one of the theories that anytime the brain is used to getting a signal and that signal is lost sometimes it'll replace it in a way. And it doesn't necessarily have to be limited to optic neuritis. Sometimes, especially in ADEM and the other disorders, there's inflammation and is a part of the brain that we don't think has any association with the vision system, and yet these hallucinations, for lack of a better word, will show themselves. So, it happens and don't be afraid to share. You want to talk about it?

[00:24:37] **Dr. Kory S. Cummings:** Double vision or?

[00:24:38] **Dr. Peter Sguigna:** Mm-hmm.

[00:24:38] **Dr. Kory S. Cummings:** Yeah. Double vision is a really tricky thing. I deal with that all the time in my office as well. So, the double vision can present itself 100% of the time, part of the time. How do we treat it? Sometimes we just have to patch the eye. If the double vision is too great to try to straighten it up with prismatic glasses, we'll just isolate that one eye while the brain settles down. If it's a double vision vertically or horizontally that we can fix with glasses, I'll try.

[00:25:07] I've got some stick-on prisms I'll send people out with. Same thing with field loss, this ties in with the double vision but with field loss on some optic neuritis, we can stimulate the peripheral vision by sticking on prismatic Fresnel prisms to give them that stimulation. So, double vision is probably one of the hardest things when it comes into my office. I'm like, "Oh my heavens. There are so many things you have to unpack on how are we going to handle it or are we going to just ignore it for a little while? Or are we going to send them for surgery to try to straighten out the eyes?"

[00:25:43] **Dr. Peter Sguigna:** So, it's a great point where it often relies heavily on the multidisciplinary team. A lot of times you may have an independent ophthalmologist, not necessarily a neuro-ophthalmologist, but an ophthalmologist whose role is going to be their evaluation for the surgical interventions for double vision. And it's very individualized. So, it's very tricky as Dr. Cummings was saying, helping to decide what's the best path forward often involves multiple providers and, of course, probably the biggest obstacle is vision loss itself.

[00:26:21] **Dr. Kory S. Cummings:** Correct. I could probably talk four hours on just vision loss and how we handle it in my office and how to unpack it for the patient. And whether it's a child, I work with tons of students with all the school districts, or if it's a working person or if it's an older visually impaired person, there's just so many ways to unpack what their needs are. What I hear most often in my office is they get real scared, they feel very isolated and they'll just say, "I've stopped doing everything and I've gone to audio."

[00:26:53] And they could have vision as good as 20/80, 20/100, which is in my opinion fantastic workable vision. So, we just try to figure out how we can address their vision loss, address their favorite things they want to do and pull that out of them sometimes using equipment and sometimes not.

[00:27:19] So, Peter asked me how do people find a low vision optometrist? This is probably the easiest way to do it if you're not in Texas. Pull up the local or the statewide commission. I practice this just to see if this would actually work. I have a little tight-knit group of low vision optometrists in Texas and there's only maybe 11 of us that we are in a private practice. It's that small and that disperse in Texas, but you can Google your state. I did Wisconsin and I said Wisconsin Commission For the Blind and it popped up the link on how to find us.

[00:27:53] If you're in the metroplex here, we're lucky. We've got about four low vision optometrists in the area and I'm the only one in Tarrant County and then we've got some sprinkled all throughout Texas. But usually that or you can go through Lighthouse for the Blind, I don't know if that's on here. Lighthouse for the Blind, they're not in every state that you can go through them. American Foundation for the Blind is a great resource.

[00:28:18] Eschenbach, one of the low vision companies, I purchase a lot of my equipment from, they have tons of tools that the patient can jump on and go through. And then Hadley, hadleyhelps.org, that's a fantastic resource for patients looking for all kinds of community with their vision loss.

[00:28:38] **Dr. Peter Sguigna:** And maybe just to emphasize, there's tremendous aid that these people can get, both with employment and navigating everyday life. And it's a very rapidly emerging area as far as the technology especially with the AI as you were saying, there's a number of actually quite impressive tools for people who both have low vision if not complete blindness.

[00:29:08] **Dr. Kory S. Cummings:** In Texas, for example, Texas Workforce Commission, they will work with, if the school district that the student is in doesn't have services, Texas Workforce will kick in and help them with college. Texas Workforce will help with the working force and then they have a division for older.

[00:29:28] **Dr. Peter Sguigna:** And we'll leave this list up here.

[00:29:33] **Dr. Carlos A. Pardo:** This is great, but I'd like to have five minutes for question from the audience. So, this is a very important topic for our patient with NMO and MOG. So, questions?

[00:29:49] **Audience Member 1:** Hi, I'm a MOGAD patient and I had a lot of optic neuritis and the latest one that I had was very mild. It was several years ago maybe 2018 or so. And I noticed on that there was very little change in my vision but I did start to get what I see now are these photo spheres. And I've been trying to figure out what they are but that picture looks exactly like what I'm seeing. And it was just one in the area of the damage and very colorful actually more than just white.

[00:30:27] I met a couple other patients that have had that and over the course of a few years they went away. I thought, "Okay, it's healing. I'm all over it." Periodically the one, in the left eye pops up here and there. Is that something that you would be concerned about, expected, or maybe an indication of some inflammation still in that area? If I were to get that because I've asked a lot of people about it. I can't really get any answers.

[00:31:05] **Dr. Peter Sguigna:** That's a fantastic question. And I'm guessing you're trying to describe the multiple graphic things, if you're facing the screen top right side. And we think these probably arise from the retina itself though that's not always a 100%. Even if you don't have optic neuritis, you might be able to create these if you were to rub your eyes particularly hard. Don't do it, but you could if you did.

[00:31:44] But it has been described in optic neuritis and others. It's very tricky to say anything definitively in these cases but it has been described. And whether that's part of the recovery process from optic neuritis or brewing inflammation, I think is very hard to say without looking at some of the other testing that's been done. So again, I think bringing up to your clinicians because I think it is important. It's telling us something about optic neuritis but what that means for the individual is based on multiple different data.

[00:32:26] **Dr. Carlos A. Pardo:** Any other question?

[00:32:27] **Audience Member 2:** Right here. I've been totally blind since September of 1990 due to optic atrophy as a result of bilateral optic neuritis from AQP-4 NMOSD. And I was okay dealing just being a blind person, had that figured out until I got paralyzed in 2001. And then when I lost the sensation of touch, it totally exponentiated how complicated things were. And I'm not able to use a keyboard.

[00:33:25] I found the one speech recognition software program that can make my computer voice activated. But do you have experience with how to access an iPhone and a touch screen and other technologies for someone who is blind and cannot access the keyboard?

[00:33:13] **Dr. Kory S. Cummings:** That is so much trickier, you're exactly right. My first thing would be for sure to go into an Apple product. They are so accessibility featured. I brought actually with me, if anybody's interested, I give all my patients with iPhones and Androids a printout of all of the visual accessibility apps that are on there. That is oftentimes with my diabetics, they'll lose the touch or the feeling on their fingertips as well so we got to figure out something that you can at least speak to but at least turn it on.

[00:33:40] At least with the Apple products you can speak to it without it having to be turned on, you can have it opened up. I mean, definitely that'd be actually a fantastic question for a website called applevis.com. It's a specific website for patients who are visually impaired and you can ask it literally anything. I had a blind patient who wanted to be a backpacker with his dog and wanted no assistance.

[00:34:04] And so I literally Googled, is there an app for a visually impaired patient? And it came up with a great resource. It's applevis.com. It's such a great blog site for people with visual impairments. That'd be the first place I'd reach out to.

[00:34:30] **Audience Member 3:** Also, should we even activate the switch control with the vision and then as long as you have the switch playing.

[00:34:30] So you can also with the built-in Apple or even on Samsung phones not all Google or Android phones but specifically Samsung, you can activate the switch access. And then if you have a switch like on your head where you know where it is or anywhere where you know where it is so that you're on it then you can trigger it to control the voice over and that with a switch.

[00:34:58] Some people use a bite switch because they can feel with their mouth. And so, they'll use that or you can use a ribbon switch where you just pull or even sip-and-puff where you can just blow into the straw to select. So, there's low vision OTs is who I would probably recommend with any of the AT Act, Assistive Technology Act, programs in your state could probably help you trial and error and with that. Otherwise, call me.

[00:35:28] **Audience Member 2:** I'll do that because --

[00:35:30] **Dr. Kory S. Cummings:** I'm on that forum with resources, so call me.

[00:35:34] **Audience Member 3:** Oklahoma doesn't know and switch controls I found don't work with voice overs sometimes.

[00:35:42] **Dr. Carlos A. Pardo:** Last question on that corner.

[00:35:44] **Audience Member 4:** Hi. So I am blind in one eye and 40% blind in the other and I've been able to get low vision resources. But something that I have found is that when you're talking about helping the patients do what they want to do, my thing was I feel it's hard for me to go out into really crowded places because of the vision loss and no periphery and I've thought that getting a stick or a cane would help me, but I've been told that you can't qualify unless you have less than 20% vision in one eye. Have you run into that issue, slash, do you have recommendations for what to do in that situation?

[00:36:29] **Dr. Kory S. Cummings:** So interesting. Are you here locally in the state?

[00:36:32] **Audience Member 4:** No. I'm in Massachusetts.

[00:36:34] **Dr. Kory S. Cummings:** It's so different. Texas Workforce here would have jumped on that with mobility and such. There is another entity called Aira Glasses, A-I-R-A. That is a mobility app now, it used to be glasses but a mobility app, that you pay a monthly subscription for it but you're connected with a human that can help you get around airports and things that can help you with everything.

[00:37:00] Same thing with the free app Be My Eyes but that might be state specific. In Texas, you would definitely be given orientation and mobility training through Lighthouse for the Blind if you were in the metroplex. That's so interesting. Here if you've got just enough loss with just enough field loss, we can connect it together. There's actually a formula that the social security department, if I had your visual fields, we could probably connect it and would make you legal potentially for Massachusetts. I'm always willing to like try to find a go around so talk to me later if you want to.

[00:37:33] **Audience Member 4:** Yeah. Thank you.

[00:37:34] **Dr. Carlos A. Pardo:** This is great. Becca, keep the microphone. I have a question for you, but thank you so much Peter, Kory. This is fantastic. This is very good.