REVERSE ALZHEIMER'S SUMMIT 2022

Applying HYLANE Technology to Reverse Dementia

Heather Sandison, N.D. interviewing **Robert Hedaya, M.D.**

Heather Sandison, N.D.
Welcome to the Reverse Alzheimer's Summit. I'm your host, Dr. Heather Sandison, and I'm so pleased to have Dr. Rob Hedaya joining us today. He's been at the cutting edge of medical practice psychiatry in psycho-pharmacology since 1979. He's been paving the way with the publication of his first book, 'Understanding Biological Psychiatry' published in 1996. He then pioneered the use of functional medicine in the psychiatric field. He is now pioneering the use of Hylaine technology in the treatment of neuropsychiatric disorders.

Dr. Hedaya is a distinguished life fellow of the American Psychiatric Association, clinical professor of psychiatry at Georgetown, where he has been awarded 'The Teacher of the Year' on three occasions. In keeping with his ability to move the field forward, he was first invited to teach PNIE psychoneuroimmunoendocrinology at Georgetown Psychiatry in the early 1990s. Wow, really really paving the way for all of us who have followed. He's a faculty member at the Institute for Functional Medicine, author of two additional books, the 'Antidepressant Survival Guide' and 'Depression Advancing the Treatment Paradigm.' He's also the found of the Center for Whole psychiatry and Brain Recovery. Dr. Hedaya is in an editorial volunteer for Advances in Mind-Body Medicine and alternative therapies in health and medicine.

And he's published several articles and peer review journals over the course of his career. He's also been featured in the local and national media on 2020, 60 Minutes, Vogue, The New York Times, The Washington Post, and many others. On many occasions he is a frequent nationally

and internationally recognized speaker. His website is wholepsychiatry.com. Dr.Hedaya thank you so much for joining us, welcome.

Robert Hedaya, M.D.
Oh, thanks for having me Heather, it's a pleasure. Real pleasure.

Heather Sandison, N.D.
I'm just so curious, it's always really a privilege to get to talk to you because you have been doing this for decades and you have learned so much along the way. I'm curious how effective the current approach to neuropsychiatric conditions is from your perspective.

Robert Hedaya, M.D.
It's a really great question. Actually I was talking with my son, who's a physician this morning and I was telling him, the patients are just getting so much more complex now. And I don't know if it's who's coming to me or if it's the nature of the world. And he said, well, the whole world is getting more sick and more complex. So it is hard for me to say, but I think that, that the newest, at this point where I am anyway, is that really to deal with the types of people that I'm seeing, who are very complex and treatment-resistant. We have to look at the whole gamut of functional medicine, as well as traditional medicine and psychiatry approaches. And then what I found actually is that despite a successful functional medicine program, that in fact that the brain itself is not really fully healed, which is kind of striking. I can actually share my screen and show you some slides if you'd like.

I'll show you that this was the case that opened my eyes really about three and a half years ago. Let me share my screen here. And I'll show you here and I'll show here, I'll put it up here like this so you can see it a little larger there. So this was a 58-year old female who had mild cognitive impairment. She came to me with mild cognitive impairment and acquired prosopagnosia associate of acquired prosopagnosia and temporal lobe seizures, which hadn't really been diagnosed. And basically for seven years, she was having trouble recognizing the faces of people that she was treating and working with in her business. So she had to make extensive notes to know whether she ever saw the person before, or didn't see the person or whatever.

Anyways, there's a whole family history and timeline from traumatic brain injury when she was four in which she was unconscious abused by her father to drinking excessively, to exposure, to

high CO2, a low O2 oxygen environment for several months actually and depression perimenopausally and then after menopause, a year into menopause prosopagnosia with difficulty in recognizing faces impaired memory of word recall and then she in fact saw a neurologist they diagnosed with sleep apnea, which she treated. And just to fast forward here, we treated her functional medicine conditions pretty thoroughly, and she felt much better. And then what I did is I said, well, let's look at her brain. So let's look inside her brain with a quantitative EEG. And this is what we found. And for people who are watching, who are seeing this, you could see here, anything in gray. This is a picture for people who are not seeing this is kind of like an MRI of the brain only it's not really an MRI, it's a functional test of brain neurological activity and neuronal connectivity.

So we can see the surface of the brain, this of the surface of the brain. We can see the different tracks in the brain and how they're connecting to each other. And we could even see deeper structures in the brain thalamus, different nuclear putamen, chordata, et cetera. We could see the cerebellum, et cetera. So we took a look inside her brain to see how is it doing after this functional medicine? She felt better and she had significant symptom relief. She still had symptoms and had trouble recognizing faces. And what you see here in the red cross hair here is the area of most abnormality and this is the hippocampus right here. And you can see that despite the functional medicine and despite feeling significantly better, her hippocampi is a woman who's APOE4 homozygous with five relatives with APOE4 with dementia. This woman's hippocampus despite the functional medicine protocol was still abnormal.

You can see that here. And you can see the connectivity of different parts of the cortex of the brain. There's over connectivity and under connectivity in blue over connectivity and this is basically saying like if I'm yelling in your ear to communicate to you, you know I'm yelling something, but it's so loud that you can't really get the information. And if it's blue here, the under connectivity is like I'm whispering. You kinda think I'm saying something, you're not really receiving the information. So you could see on this image in the lower right quadrant here that there's both hyper-coherence is what it's called and hypo-coherence between different areas of the brain. And then in pink here on the right you see the surface areas of the brain that are abnormal.

So this is kind of where she was after functional medicine, which was really astounding to me. And to fast forward here, I'll take you down here, this is where she was now after treatment with

the hylaine technology this is where she was. And for the people who are not seeing this, everything is normalized. Virtually everything is normalized. There are a few areas of hyper-coherence and hypo-coherence in blue and yellow here, but you can see the hippocampus now, instead of being 2.7 standard deviations from the norm is now 0.4 standard deviations and in fact, this was so astounding that we published this. We just published this right here. This was just published here, this case. And so that's a long-winded answer to

Heather Sandison, N.D.
I wanna take pieces apart because a lot of our listeners here, they're not medical professionals and they don't know everything so I want to help translate a little bit here. So you basically had a woman in her 50s who had the perfect storm of basically the traumatic brain injuries, the genetic predisposition, the family history, some trauma, she went through menopause.

She was having significant symptoms of memory loss, and not being able to recognize people's faces. This was interfering with her ability to work. And you took her through a comprehensive functional medicine treatment plan. So she got essentially the best in what we know about for cognitive function for brain recovery. But you could see that in her hippocampus, in the memory center of her brain, that she didn't get as much benefit as you were hoping she would. And so you did this hylaine say it for me again, Hylaine?

Robert Hedaya, M.D.
Hylaine, which stands for Hyperbaric Quantitative EEG directed laser LA the LA is laser and NE is neural exercise, typically neurofeedback or other types of neural exercises.

Heather Sandison, N.D.
I am so excited to hear more about how you do that. What are the nuts and bolts? How would someone know that that would potentially help them? And then what would it look like? Is it once a week? Is it every day? What do treatments look like?

Robert Hedaya, M.D.
Great question so what we do is we use the qEEG, this quantitative EEG, which I will explain for people, to give you some background on what that is. Okay, here we go. So this is a quantitative EEG, this squiggly lines here, right? And what if you're listening to this basically we have a map where we basically put a cap on people's head and we monitor the electrical activity at 19

different points, each of these circles here is one of the points so you see the frontal area here, other frontal areas here, the central and temporal areas, parietal occipital areas.

So it's 19 different points as well established technology accepted by the American Association Neurology. And we get the electrical signals from all of these points and then through a very very sophisticated algorithm, you can actually take this data and know what's happening on the surface of the brain, in all of the different surface areas of the brain, the connections between different surface areas, the information highways if you will, the neuronal pathways, the hubs, which are the networks like the cities in the brain and you get all that information about what's over-functioning, what's under functioning.

What's well connected, what's not well connected. And then based on that, you can understand, well, is this a head injury? Is this COVID? Was one case I have that I maybe show you was it hypoxia at birth? Is this a generalized metabolic condition? You can get clues about what is going on. And based on that, you can decide, I decide, are we gonna use hyperbarics? Are we gonna use laser? Are we going to use neurofeedback? What's the best approach here? And that's what we do and it can be very, very specific so

Heather Sandison, N.D.
Sometimes combination of hyperbarics, laser and neurofeedback?

Robert Hedaya, M.D.
Yeah and sometimes just one or two of them. Yeah.

Heather Sandison, N.D.
And so what might someone expect? It sounds like it's very individualized based on what you find in the data, but what could someone expect? How long did it take for this woman, this case that you shared for her to start getting symptomatic improvement?

Robert Hedaya, M.D.
So it's very interesting a great question. You are asking great question. So this was astounding. So the first laser treatment, she came back into my office and she said to me, I was just scheduling the next treatment and she said, oh my God. I can remember the face of the person I worked with this morning. And his wife's dimple. Oh my God I can remember. And she actually

recovered her facial recognition and it never went away. Okay, that's because she had brain cells that were kind of liminal. They they were alive, but they really weren't functioning doing their job. They were just staying alive. So we woke them up. Then in terms of the hippocampus and the memory that took 30 treatments over the course of three months. And we actually showed over the course of three months that she improved.

And then she actually improved even further a month after the treatments were stopped. And then three months later, she actually regressed without treatment. So in her case, she needs maintenance treatment because she has an underlying pathology, which is this APOE e4 gene genetic problem. And so she needs ongoing treatment, some people don't. Some people need 10 treatments, one treatment every twice a week, or sometimes a treatment three times a week. For example, for depression, you might only need 10 treatments. Some people, I have a patient who had depression since he's 12, he's 40 years old. And he needs ongoing treatments, but he is depression-free for the first time in however many, 28 years, right?

Heather Sandison, N.D.
So the consistent with functional medicine and kind of this reticent approach that we champion here, there is a lot of individuality, right? This is not a cookie cutter approach. This is very much, let's see what data we can find for you specifically, let's create an individualized treatment plan. And then let's assess how things go along the way that it's not going to be super predictable all of the time, but we get some sense based on what's helped other people I wanna dive in because you have so much expertise in psychiatry. There's this interface between depression, anxiety, and risk for dementia. Can you tell us a little bit more about how those two things fit together?

Robert Hedaya, M.D.
Yeah so that's really fascinating, right? It's also little scary, right? So first of all, the evidence seems to indicate that if you have recurrent depression, your risk for MCI or dementia is somewhere in 40 depending on the study, 40 to 60%. Okay, that's really high. If you have PTSD, your risk for dementia is also significantly increased. And interestingly with PTSD, the type of dementia that you're most likely to get is a frontotemporal dementia. It doesn't mean that is what you'll get but you're most likely to get that. So the question is like, how are these things interacting with each other?

And I think the best way I can understand it is that in some cases that the depression or the anxiety is actually the earliest manifestation of a neurodegenerative process, which is activated by genetic vulnerabilities, environmental factors that we all know about in functional medicine, that I can think of a case of frontotemporal dementia, where I think the first manifestation was the person having panic disorder, sudden onset of panic disorder at age about 32. And then developed his dementia in his 50s and passed on by the age of I believe it was 62.

Heather Sandison, N.D.
Well, so you're saying that maybe that frontotemporal dementia was showing up even in his 30s but manifesting as panic attacks versus as a dementia. And this is like a spectrum and the early kind of prodromal phase is anxiety, or maybe for some people depression.

Robert Hedaya, M.D.
That's right, I read, I couldn't tell you of the sources, but there's actually abnormalities in neuronal function from birth in people who are APOE4 whether that's sufficient to cause dementia it's obviously not in most cases, right? So that's what I would say it's early manifestation in maybe say 30, 40% of the cases or so.

Heather Sandison, N.D.
And so with APOE4 for positive patients, people who are homozygous or even heterozygous, maybe a three, four, what do you recommend? Are there ways that they can take that additional care to make sure they're in the 50 or 60% of people who do not end up with dementia despite this genetic predisposition?

Robert Hedaya, M.D.
Yeah, well, there's so much that can be done, right? And the first challenge I think is to have a good discussion with the patient about, do they want to know if they have the genetics or not? It's worthy of not just one discussion, but multiple discussions, because for some people, probably many people, knowing that they have a gene that increases their risk for dementia it could be devastating, it could be frightening. It could cause depression and anxiety in and of itself. So the first question is, if you knew this could you handle it? How would you manage it? What are the pros of knowing? What are the cons of knowing? What are the pros and con? Some people decide, look, I'll just do what I have to do anyway. I don't want to know, right? So, but once you decide to go down that path obviously.

I would say obviously lifestyle medicine is critical, right? So from dietary work if you're APOE4, for example, monosaturated fat diet, et cetera, lots of greens vegetables and keeping your inflammation down. I'm very big into looking at some of the other genetics that control inflammation, like the NR3C1, FKBP5 genes which are genes that help you to transmit the signal, the cortisol stress hormone, the signal has to be transmitted to the nucleus and then to the genes so that the genes can respond to stress and inflammation. And a lot of my patients have many SNiPs many variants in these genes. And so they are effectively glucocorticoid resistant, meaning they have their stress, they make the cortisol, but the signal does not get transduced or conveyed to the genes efficiently. And they're much more vulnerable to immune system problems to depression, to suicide, to anxiety, and to PTSD, alright?

So this is a big deal. And if you're talking about controlling inflammation in the long term to prevent dementia or neurodegeneration, then you obviously want to control inflammation and through diet, through environment, no mold in your house, et cetera. And also make sure that you're signaling is proper.

Heather Sandison, N.D.
And then I would think from what I gather here is the treating effectively and efficiently and probably aggressively with something like the hylaine therapy, if you have those early signs of yes, MCI, but even depression or anxiety or PTSD or traumatic brain injuries as well, getting ahead of all of that before you start to have memory loss, seems like it would a lot of sense.

Robert Hedaya, M.D.
I think it does, I think it does. I mean, I can show you if you like a case of a traumatic brain injury that we treated, if you'd like to see that you tell me, depending on

Heather Sandison, N.D.
Yes, yes I'd love, we know that traumatic brain injuries are one of those causes of dementia and there's of course, a lot of a relatively large amount of data around combat veterans and then athletes who have had repeated traumatic brain injuries. But also there are many women who suffer from abuse and well, not just women, but lots of people who suffer from abuse, especially formative brains if there's been child abuse that they then end up with not only PTSD, but TBIs and that that puts people at risk for less cognitive function. And so understanding that, like, it's

not your fault and that maybe there are interventions that can help turn this around so that you can get that optimal function back is the hope that I would like to share with our listeners.

Robert Hedaya, M.D.
Yeah, I think there's so much hope. I think it's really important that in my opinion, dementia is preventable and that's where it's at. It's really about education and prevention and that's where the whole psychology comes in. Like, how do you wrap your head around this disease that, maybe you're 25 years old or 30 years old and you're you, I'm not gonna worry about that. Well, now's the time, right? So that takes education and takes coaching or maintenance or repeated visits to the doctor and doctors who are thinking that way, right? But I'm pretty convinced that it's about prevention in most cases and prevention or pushing it out 10 years or whatever it is that we can do that. I mean, I have a case to show you how plastic the brain is. Let me share this other case which is pretty, it's pretty amazing really. I'll show you this.

Heather Sandison, N.D.
I couldn't agree more. I believe that for my generation, especially Alzheimer's is optional, right? We know so much about how we can prevent it. And what are your thoughts about reversal? I know you just shared a case. Is that something you're seeing regularly?

Robert Hedaya, M.D.
Yeah, so here's a guy, this is a guy who had, let me see, I'll scroll up here through his case history a little bit here. So this is a guy who had mild cognitive impairment. When he was a young kid, he had bedwetting till age 12, which is often a sign actually of some neurological problems, but he did okay and then he at age 15 developed severe depression, and then he had some high productivity years, alcohol abuse. Then he had major depression when he was about 24 and then 26 and then in his early 30s. And he was treated with Prozac when it came out. And then finally, 2004, he stopped marijuana and alcohol and treated himself with bupropion and then developed rapidly progressive cardiovascular disease. So by the time he came to me he'd mild cognitive impairment, trouble with names, spatial disorientation, word finding, et cetera. So he was worried and he was an executive who was he was getting by.

Heather Sandison, N.D.
And there's nothing mild about mild cognitive impairment, right? Mild cognitive impairment is significantly affecting people's day-to-day lives.

Robert Hedaya, M.D.
That's right, there's nothing mild it's kind of scary that is reversible. It's reversible. So with functional medicine you could see he had pancreatic insufficiency. He did have that gene I was telling about the NR3C1 and he had an abnormal ACTH stimulation test. So we treated him with some hormones and got him off his lunesta and corrected his nutrients and his lifestyle got him on high intensity interval training and worked on his diet. And he did very well, but we did a qEEG and his qEEG quantitative EEG revealed a pattern consistent with mild vascular dementia. And I won't bore you with the specific details of that. And we made a little plan for him. This is a not gonna make too much sense to people, but we made a plan for him of where we're gonna treat in these yellow areas you could see we treated in the frontal area it's called F7, F3, F4 on the right, and then C3 C4 in the central area over the motor strip area, and then temporal lobe on the right.

Heather Sandison, N.D.
And When you say treatment, is that with laser or with no

Robert Hedaya, M.D.
Laser.

Heather Sandison, N.D.
Okay.

Robert Hedaya, M.D.
This was laser and hyperbaric oxygen. So here in this image here on the left, you see the surface of his brain is all gray. The surface of his brain is completely normal, okay? But you can see here in the blue connectivity between the different areas of the brain is very poor, the different parts of his brain not speaking to each other, basically, okay? And this image here with the red circle is just kind of showing you the same thing in a different way. Like we can expand this here and show this specific area of the brain.

How is it talking with this specific area of the brain, et cetera. There's a lot more detail we can get than I'm showing you here. We treated him and this on the left here is before hyperbaric oxygen and laser and basically what you're seeing is poor connectivity between different brain areas.

And this is after the hyperbaric oxygen on the right here and the laser, and you can see is virtually normalized. Right?

Then we looked at something called the salience network in the brain. And the salience network tells you like, what's salient, what's relevant? Should I care about this or not? Is this gonna give me a reward or not? You know that's what the salience network does and his salience network was a little bit dysfunctional I should say, and everything bothered him. And he wasn't regulating that. And what we look at here on the left, and we see these areas in the frontal lobes and some in the temporal and parietal lobes are not talking to each other well. And his salience network was dysfunctional. This is before the hyperbaric action in the laser. After you could see his salience network is completely normal. And he would say he reported, you know things aren't bothering me that much. He's able to get his work done and things aren't bothering him.

Now, here's the amazing thing. Here is his CNS Vital Signs I don't know if people use that, but we get a baseline on everybody. And so here he was at age 64 in May of 2019. And his verbal memory was in the 66 percentile. And after the treatment a year later, almost precisely a year later, he's in the 95th percentile. His composite memory went from the 55th percentile to the 82nd percentile. He told me, he said, "My memory is my superpower." I thought he was joking, right? So I repeated the CNS Vital Signs and he was not joking. He really.

Heather Sandison, N.D.
That's incredible. It's so gratifying, right? When the pictures that you're getting on an EEG match the patient's experience. And then you can also measure it objectively with something like CNS Vital Signs. It's so fun when they all match up and it's working. I can imagine that there's a lot of people who have questions about the laser, the hyperbarics and then the neurofeedback. So let's dive into the laser. Many of our listeners are familiar with either the juve light or the vielight some of the other ones out there that are basically using photobiomodulation and red light therapy to help with mitochondrial function typically is how we think of the mechanism working. So is the laser you're using similar to that? How is it different what's going on there?

Robert Hedaya, M.D.
Yeah, so there's you're right. There's broadly speaking, there's the LEDs, the light emitting diodes, right? And then there's the lasers and the wavelength can be the same it might be 1064 or 810, or whatever it is, but the power the ability to direct the laser exactly where you want it to go and

to deliver specifically how many joules you want to deliver, where you want to deliver, that's different so we look at really eight or nine different parameters in terms of how we treat. So I kind of think of it's like, I think that there's a place for the vielight and these things, but they're kind of more generic, but they can help people, there's some question of, do they penetrate the brain?

How are they working? Is it because of the non-local effect or local, whatever it is, it seems like there's evidence that they're working. I think that I would like to see studies done by third parties that are not financially invested to know that, that's the case, but let's assume that they're working and how they're working we don't know but what we're doing is more targeted. So for example, I can show you this particular case here. This is a guy who actually I'll show you I'll share my screen here.

Heather Sandison, N.D.
This sounds like it's highly precise.

Robert Hedaya, M.D.
Yeah.

Heather Sandison, N.D.
So you go exactly to the region of the brain that's affected. And when I think of laser sometimes it pulls up these images of like an action movie where laser is highly destructive. And yet what you're describing is something that sounds very healing. So how do you get that healing benefit and not burn something?

Robert Hedaya, M.D.
Great question so, first of all, we don't do a laser on anyone until we know that their brain can handle it. So we get an MRI sometimes MRI to look at the blood vessels and make sure there's no kind of an aneurysm or anything like that. So, assuming they're cleared for it, you're using it, you're controlling the heat by what kind of water did you use? What area that you're covering and then sometime and you're measuring the temperature on the skin and you're taking a break sometimes, but generally speaking we don't allow the skin to get warm. If the skin gets warm, we take a break and we'll work on a different area.

This image here that I have here, you can see, this is a guy who had a paranoid schizophrenia. I mean, I didn't really think of him that way. I thought of him as just a guy who had fears, whatever but anyone else would probably call him a paranoid schizophrenic. He turns out he told me finally that he was having facial distortions, meaning his whole life whenever someone looked at him, he thought they were looking at him in a demeaning way. So we did the qEEG and we saw this left inferior fronto-occipital fasciculus it's the highway from the front of the brain to the back of the brain here that was actually abnormal. You can see most of the rest of the brains neurals accept this vertical occipital fasciculus here also. So basically his brain was completely normal here.

And then we treated him with four treatments with the laser at this point here at the front. And at the point where this track terminated in the back and his facial distortion, you can see the qEEG afterwards has actually that abnormality is gone here. It's a little bit over hyperactive, a little bit, but basically the whole thing is cleared. And this occipital fasciculus is also cleared and his facial distortion melted away. He reported it and then here's, I thought, well, placebo, maybe placebo then he said to me and my reading speed has picked up. I thought that's interesting. So I went and I looked up these tracks and I low and behold a control reading speed. So I was like, well, it was not a placebo. I didn't know about that. So, it's very, very specific. It can be very specific.

Heather Sandison, N.D.
It sounds yeah, very very precise. So hyperbarics kinda switching gears from laser to hyperbarics. There are soft chambers, hard chambers, there's wound care for hyperbarics there's different levels of pressure, different levels of oxygen concentration. What are you using and how do you think it's working?

Robert Hedaya, M.D.
Yeah so I think that hyperbaric oxygen is a great tool. we use a soft chamber there's obviously place for a hard chamber. I think that there are many established uses for hyperbaric oxygen, right? And gas gangrene, thermal burns, compartment syndrome, et cetera. But they're also emerging uses and that's what we're doing. And so what are these? These are things like traumatic brain injury. There's good data, actually that TBI, even if it's an old TBI will respond to hyperbaric oxygen auto immunity, Alzheimer's disease, there's evidence for that, PTSD there are studies coming out of Israel. PTSD COVID long COVID. And then of course used in stroke and

sports medicine et cetera. And this is the debate about seizures. Some people say it helps and some people say it hurts, et cetera. So what we use is a soft chamber it's like 1.4 atmospheres and with 100% oxygen, but most of the benefit comes from the pressure and not the oxygen. And it's other people using hard chambers at 1.5 to 2.0 or something like that. We've had good results with the soft chambers.

Heather Sandison, N.D.
Describe a little bit more about that. So it's not as much about the oxygen you're saying that you think it's more about the pressure and this lymphatic, like what exactly is going on with that pressure?

Robert Hedaya, M.D.
Well, so it seems like at pressures below 2.0 atmospheres, you have increased superoxide dismutase catalysts, you have peroxidase heme-oxygenase-1 activation of these anti-inflammatory types of things so you have reduced oxidative stress. You also have increased zone of oxygenation, right? And increased red blood cell flexibility and increased zone of perfusion, let's say, and then lower intracranial pressure, increased cerebral blood flow, there's a lot of mechanisms, right? But it's quite astounding, I would say.

Heather Sandison, N.D.
Yeah, okay. And so do you have any cases by chance where you used just hyperbarics or is it typically you're putting these things you're layering them on top of each other.

Robert Hedaya, M.D.
I do have a case of traumatic brain injury where I use just hyperbaric and I wanted to show it to you but I can't because I see that the patient's name is on the slide so that's so I can't do it so I'll describe it to you.

Heather Sandison, N.D.
Describe it, yeah.

Robert Hedaya, M.D.
describe it to you. This is a woman who had multiple head injuries, but the one that was most profound was a frontal head injury and when you look on the qEEG, you actually see the whole

frontal area of the brain, but a distinct line of injury meaning, in front of the line in the frontal lobes, it's all blue on the qEEG, meaning low activity of the surface of the brain. And there's a distinct line, like a shock wave from her injury. Behind that line, it's all gray. Incredible pattern. We did and she presented with not surprising a bipolar disorder which was late in onset. She had a manic-depressive disorder, hospitalized multiple times, late onset. She was in her mid 30s. That's a very late onset for a mood disorder. And it was a result of the injury and why? Because the areas of the brain, the frontal lobe, the orbital frontal cortex, et cetera, that control your impulses and your judgment, and your mood regulation, et cetera, is all damaged. So 40 treatments of hyperbaric oxygen and soft chamber. And we repeated the qEEG and normal.

Heather Sandison, N.D.
Wow and what was her experience like? How had it changed?

Robert Hedaya, M.D.
Well, we do many things at once. We don't do one thing and wait so her experience is that she has not been hospitalized. I think it's about a year and a half. But she still has hypomanic episodes or even manic but we've been able to manage them with very, very low doses of medicine, very low doses. And she's getting stability back in life.

Heather Sandison, N.D.
Yeah and hopefully not having to deal with the side effects of a lot of medications. That's one of my favorite things about combining functional medicine with psychiatry is that even if we can't get away from the medications entirely, we wanna use the best of both worlds, right? And we can use those medications but sometimes at a dose where our patients don't have to suffer with the weight gain or the libido loss or that feeling of kinda the apathy or numbness that might happen if we're trying to increase doses.

Robert Hedaya, M.D.
That's correct.

Heather Sandison, N.D.
Really fun work. So, okay, we talked about laser, we talked about hyperbarics and now I wanna talk about neurofeedback. I think this is sort of a black box that people are just curious about,

but really don't have a good grasp of. So tell me, like for a layman who's maybe heard the word neurofeedback but has no idea what that means. How would you describe it?

Robert Hedaya, M.D.
Okay, the simple explanation is it's like weight training for your brain, okay? That's the simple explanation. You wanna build up as certain muscle, lift weights build up your triceps, right? Or your biceps, right? So the way it works and the next level explanation is the you put that cap on your head and the cap is just kinda reading the electrical signals. And we see, which networks in the brain are overactive, which one are underactive. And how does that correlate with your symptoms? And then we say, well, we wanna bring you to normal. Right? So we set up a protocol that basically will do that. And the way it works is you watch a movie, you pick a movie that you wanna watch.

You wanna watch this movie, your brain, your limbic brain says, there's a good movie. I wanna watch this movie. And what happens is when those areas of the brain are doing what we want them to do, you get to watch the movie. And when they don't to the degree that they don't do what you want them to do, the movie kinda goes gray and the sound goes down. Well, very quickly, your unconscious brain figures this out and says, I wanna watch that movie. I make figures out the pattern and it starts working to do what it's supposed to be doing. So you're actually strengthening or lowering the activity in these different pathways, right? And it's quite remarkable, it's quite remarkable. And so that's

Heather Sandison, N.D.
It would be something that I would look forward to like, I get to go to the doctor and watch a movie and relax, but people might walk out of there actually feeling like they've had a workout, right? Because their brain is using energy and is having to work really hard to keep that movie playing. Is that right? Like what do people describe on their way out of

Robert Hedaya, M.D.
Yeah, I would say that the more traumatic head injuries you've had, the more exhausting it will be. So in which case you use shorter sessions and maybe even less frequent sessions. For people who haven't had that much, it may not be that exhausting. So it kinda depends but usually after a few rounds one or two rounds, the brain is kind of picked up and it's learning what to do, and it's not so exhausting, but for some people can be very tiring.

Heather Sandison, N.D.
I've had the privilege of interviewing and talking to a handful of experts in neurofeedback and there are different devices. There's different ways to do it, there's different programs. Do you see that there's a big difference in that spectrum of types of neurofeedback? Or do you think they are all kind of created equal? Which one do you use? What do you recommend?

Robert Hedaya, M.D.
Well, I would say that I'm using sw LORETA 19 channel neurofeedback, which is from what I can tell, remember, I'm new to this field. I've only been doing this for three or four years. There are people who have been doing it for 40 years, but I actually have been trained by one of the guy who I considered to be a genius, really. And I review all my qEEGs with him and I'm learning and continuing to learn so I think it is probably best form of neurofeedback is the sw LORETA 19 channel neurofeedback

Heather Sandison, N.D.
Results?

Robert Hedaya, M.D.
I was seeing results that are, Heather I can't tell you how I come home and I tell my wife that my mind is blown. My mind is blown and I can't believe that I haven't been doing this for my whole career. Of course I didn't know. It is mind boggling, simply mind boggling.

Heather Sandison, N.D.
When we know better, we do better. And I'm so inspired every time I talk to you, I'm like, I wanna be doing more of what Dr.Hedaya is doing in my office, because you're getting consistent results. I so appreciate how you're pushing the envelope. You're never satisfied. I think you and I share this. We're never satisfied with getting good results. We want great results. And we want them more consistently for more of our patients. And your commitment to that is just inspirational and really, really appreciated. What do you do for your brain?

Robert Hedaya, M.D.
So I did a qEEG on myself actually about three years ago. How's I go, oh my God, this is really bad. And so exercise diet and optimizing I'm on thyroid hormone and optimizing my thyroid hormone. And I was able to normalize it, which was quite a relief and so that's what I do. The

main thing I would say that I do really though which is a long process for me, is spiritual work. That's the main thing is because we live in a society where we're raised to believe we should have control over the outcome and we don't. Sometimes we do, but generally if we're fortunate things go the way we would like them to go but it doesn't always, so my belief is that there's a plan for my life that everybody's life, there's a plan for everyone's life. And you have to just kind of learn to trust that there's a good plan that it's all good actually. It's all good, you just don't see it. In retrospect, you can see it. And I could see that in my life, the things that were the hardest for me were actually turned out to be the best. Would I like to do them again? No, no. But that attitude of acceptance going with the flow actually allows me to be calm and much less stressed about things. And it'll be what it'll be.

Heather Sandison, N.D.
Yeah there's a physiological component to that right? When we can accept and we have these spiritual practices that serve us that can reduce the stress signals that can put us at risk. And I think hearing from you clearly a high integrity, scientifically minded physician, hearing how important that is not only for you personally, but I'm sure you share that professionally with your patients. Making sure that there's this balance across our lives, our physical, mental, emotional, spiritual lives. I think it carries a lot of weight coming from you.

Robert Hedaya, M.D.
Yeah, it's so important, it's so important because it's the fundamental thing with how we see the is our lens through which we see the world, right? That's the fundamental thing. That's the fundamental thing in terms of your environment is how to use your attitude if you wanna call it attitude. And that takes work.

Heather Sandison, N.D.
Yeah, cultivating. Yeah, absolutely. A lot of what you describe here takes work, right? It requires time and effort, like you said, it's bicep curls for your brain when you go into neurofeedback. And so how do you communicate with patients when they're feeling overwhelmed or like it's too much.

Robert Hedaya, M.D.
Yeah so what we do, we tell them that they're gonna feel overwhelmed and it doesn't help, right? But we tell them, we try and screen people to see who can do this, who can't do it. We

have a terrible track record with that. We're always surprised by the people who are doing what we never thought they could do and doing great. And the people we thought were a shoe and they're like not doing it or something so we have a coach, I have a nurse who's in on every session and she's taking notes and she's communicating with them between sessions. How's it going, trying to remind them what to do. The staff is trying to help them.

So we do everything we can possibly do and we always try to enlist their resources, whether it's their spouse or the parent or whatever it is. And try to explain what the roadmap is so they know what they're in for. If they want to do it, this is gonna take some time, it's gonna be six months, eight months, 12 months, whatever, it'll be of hard work and I wish there was an easier way. I admire you for what you are doing with this inpatient program, which I think is so sorely needed. And I hope you expand it and bring that to more people. I really do, I think it's wonderful.

Heather Sandison, N.D.
Thank you so much we're hoping to do that. And it's so validating to hear you say that, 'cause we also find that health coaches and nurses that follow up, but we're working with cognitively declined patients and it's no fault of their own, but it's part of their disease process that it's gonna be harder to incorporate these more complex changes. And so hearing that you also experience that health coaches are very helpful, nurses are very helpful and having that staff to support everyone, enlisting whoever their support system is, and really letting everybody know, setting those expectations ahead of time that, yeah, this isn't gonna be easy.

This isn't swallowing a pill and having it work the next day, this is hard work. And then the other piece that you mentioned that I also have experienced is this idea that there's like a readiness for is how some people kind of describe it. And I do not find that very helpful. It's the people that you don't expect to nail it who do it. And then the people you think have the best setup and they aren't able to execute. And so I just, like these conversations are so great because I'll talk to people and they're like, "Oh, you need a readiness score. You need a readiness score to evaluate if somebody's ready to do this." And then I feel like we would lose people who get the most benefit if we do that.

Robert Hedaya, M.D.
I agree with you completely. I'll tell you one quick story of a woman, 72-year old African American woman with aphasia, dementia, and husband had the money and he wanted to do it and the

family, wanted to do it. And she doesn't want to change her diet and she doesn't wanna do this and she's diabetic and the other, I said, listen, don't waste your time and your money really. I don't think this is gonna work. I just didn't wanna put them through it. I said, listen, you can lead a horse to water but you can make him drink. He says, "listen, I grew up on a farm. And if you lead a horse to water and it doesn't want to drink you put the horse down its mouth." I said, okay, alright, fine, I'm in. So of course she didn't wanna do anything, but so I said, alright, look, do the qEEG, Let's do the laser, let's see how it works.

So literally Heather, I sat at my desk, I won't forget this. And I have the plan and I know where I'm gonna do it. And I just pops out of my mouth and said, "God, I need a miracle." I go into the laser room, he's there, I'm there. I'm lasering I don't even know because his dark skin, is it gonna penetrate or not is gonna absorb the light I don't know. She's starts talking. She starts talking and I have tears in my eyes and he has tears in his eyes and I just was astounded. I mean, just astounded now she had damage so she didn't have full speech. But I was able after, I don't know, 10 or 12 treatments to have a 45-minute therapy session with her.

Heather Sandison, N.D.
Wow.

Robert Hedaya, M.D.
Yeah.

Heather Sandison, N.D.
Wow, after today I'm inviting myself to hang out with your clinic and learn from you whenever you'll have me because you just have so many incredible insights and you're using these really amazing tools and it's showing me the gaps in what we have to offer here. And so if you'll have me, I'm gonna come hang out with you and get to the see.

Robert Hedaya, M.D.
The goal is to get this out there, I'm hoping to write a book on it and to train people, et cetera, because it's gotta be utilized more.

Heather Sandison, N.D.
Right. I think we both share the goal of impact. We know that this can be reversed. We know this can be prevented and so it's really just a matter of changing the story and letting everyone know that this is possible.

Robert Hedaya, M.D.
That's right, that's right.

Heather Sandison, N.D.
Thank you so much for sharing your valuable time with us, your valuable insights and really more than anything, the hope that everyone can have when it comes to this awful torturous disease. Thank you so much.

Robert Hedaya, M.D.
Oh, thank you, Heather.