Show Introduction and Guest Overview

Welcome to the Healthy Brain Toolbox. I'm Doctor Ken Shaman, neurologist, speaker, author, and host for this show. In each episode I interview influential people whose work impacts how we live and how we think.

My guests are leaders in the health and fitness industry. Physicians, scientists. Here you'll find conversations that break down barriers, expand your horizons, and give you the tools you need to protect your health and nourish your aging brain.

Welcome. Today, on the Healthy Brain Toolbox, I am joined by Ronnie A Burchard, a neurologist, a medical innovator and entrepreneur who's helping to redefine how we detect Alzheimer's disease.

Doctor Burchard is the chief medical officer at Insight Hospital and Medical Center in Chicago, where he leads neuroscience programs and specialty care expansion across the system.

He's also the CEO and founder of Neuro Gen Biomarker. This is a company pioneering at home blood based biomarker testing combined with digital cognitive assessment tools, giving patients and clinicians faster, more accessible ways to detect early signs of Alzheimer's and mild cognitive impairment.

You trained in neurology and neuro immunology at Michigan State University College of Osteopathic Medicine, and over more than 15 years in clinical practice.

He's been deeply involved in research spanning multiple sclerosis, neurodegeneration and biomarker driven neuro diagnostics. What I find so exciting about Doctor Bouchard's work is that it sits right at the intersection of precision medicine, digital health and accessibility, bringing sophisticated neuroscience into people's homes.

So today, we're going to trace the evolution of Alzheimer's diagnostics from the earliest discoveries of plaques and tangles to Pet imaging, blood based biomarkers.

And now this new frontier of home based testing and explore how neuro gen biomarker is helping make that future a reality. Welcome to the Healthy Brain Toolbox.

It is so great to have you here. Thank you so much for having me. Before we dive into cutting edge science, I'd love to start with a little bit of history.

More than a century ago, Doctor Alois Alzheimer described those hallmark plaques and tangles in the brain. So from your perspective, what's the through line from those early autopsy findings to the molecular precision tools we're using today?

Yeah, I think it's a beautiful question. And I think it's a great place to start because it gives us the ability to really see at 100,000ft what's happened.

When you look back in 1906, when Doctor Alzheimer's was looking at autopsies under the microscope and really first characterized that these are tangled proteins and plaques that are connected to people who had a devastation in their memory.

And then you start to fast forward. It clearly was the fact of that time could describe what had happened, but it couldn't intervene in time to change.

That's where we sat in 1906. If you fast forward to today, for example, that exact biology, same hallmarks that were described, we're seeing those now in a single drop of blood.

From Alzheimeru2019s Pathology to Modern Biomarkers

And so if you pause and think about the gravity of what he was witnessing under that microscope in a deceased patient, we can now measuring living people at the most finite molecular level.

And to me, the throughline in all of this is that for 100 years, we're always looking back. And for the first time now, I think we're looking forward.

We're able to detect, we're able to predict, we're able to potentially prevent this disease. And it really shows you that discovery, which at the time was remarkable, was just the beginning of the story, not the end up, hey, here's this disease, which is very exciting as a clinician, as a scientist.

I see the challenges in the accuracy of the diagnosis of Alzheimer's as much a sort of cultural thing, if almost not more than really a scientific one.

Given the availability of this where the science is today. Because in my clinic, there's still seems to be a lot of confusion in the general public about how difficult it is to diagnose Alzheimer's accurately and what folks think is really required.

I'm sure you have too. I thought that the only way to be sure that person had Alzheimer's is you have to wait until they die and look at the brain under the microscope.

And we do know from some published papers that the clinical diagnosis of Alzheimer's. It's time for a brief message from one of our sponsors. Do you ever find yourself struggling with brain fog, memory lapses, or that mid-afternoon crash?

Maybe it's difficulty focusing mental fatigue, or even the early signs of cognitive decline. These can all be signals that your brain isn't getting the fuel it needs.

That's why I recommend keto five, a breakthrough in targeted brain nutrition. There are supplements. Exogenous and XO ultra are scientifically designed to support focus, memory and long term brain health.

XO genius delivers a rapid boost in ketone levels, giving your brain clean, sustained energy for hours. Without sugar, without carbs, without the crash.

XO ultra goes deeper, providing a pure beta hydroxy butyrate formula to help you achieve effective ketosis. For sharper focus and stronger mental clarity.

But it's more than energy. Research shows that ketones can reduce neuroinflammation, protect brain cells, and support mitochondrial health defenses against conditions like Alzheimer's and Parkinson's disease.

Imagine clear thinking, better memory, and a brain that thrives not just today, but for years to come. Fuel your mind. Protect your future. Visit Doctor Charlene's dot com forward slash collection's forward slash Quito five.

Quito five to learn more and get started today. What would you say are some of the biggest challenges clinicians face when trying to make that call early, and with a lot of confidence?

Yeah, I think you're hitting the heart of what the issue is in Alzheimer's, which is that with everything we know today and all the work we've done in the neurologic field, diagnosing it early is incredibly difficult and notoriously inaccurate in the current clinical infrastructure of how we practice medicine.

The reality of the disease is that the symptoms start very suddenly misplaced. Name year, they're forgotten appointment, and most of us can explain these things off as normal aging or stressed.

Or my speech might vary. And then by the time that memory loss becomes clearly unmistakable, years and

sometimes even a decade have occurred. Underlying all of that, you had this silent biology that that's occurring in the brain when we described previously.

So from the clinician side, I think that uncertainty is painful. We really want to help people early. But our tools, at least recently, up until recently were either too subjective, too late, or we just couldn't really get access to them.

And so a lot of docs, I think, are left making this sort of your Stults best guess diagnosis and that's really hurt. I think the way that we've been able to conquer the disease.

For me, the new era, this biomarker driven testing does give us an opportunity. It changes everything in terms of how we approach it. We're able to see fingerprints at a molecular level years before symptoms are severe, and we're able to react and anticipate what may come.

And then even getting people in clinically into where they need to go for confirmatory testing is really where we're going. At the core of all this, it's not just about diagnosing Alzheimer's.

It's really about getting people really back. The one thing that this disease does, which is it steals time. And we're coming into an age now where I think we will improve upon this.

But yeah, in the current infrastructure, it's really not very well done. I think overall just can admit that even the Bachelor allergists in the country, it's really tough to do without the right tools.

Absolutely. But getting better. There's light, there's the shining light here. There's the hope. It is definitely moved into the modern age. We just have to get a lot more folks on board.

If someone came to me with concerns over cognitive impairment, it's the sort of very basic evaluation good history, a physical exam, maybe a pencil and paper cognitive test, the Saint Louis University mental status, the many mental status we use with the Montreal Cognitive assessment.

There are other platforms of course, out there. But in the end, we're doing some lab testing. We're testing B12, folate, thyroid sedimentation rate. We send folks for an MRI, and that's where I'm heading, because MRI has certainly come a long way.

We have better and better magnets, higher resolution. But the traditional MRI meaning this sort of gestalt lets you know it takes a radiologist to look at this and describe what they see without objective metrics, meaning without quantitative volumes.

It's actually a pretty weak test. Now, some of these lost a tremendous amount of brain volume. They're probably a lot further down the rabbit hole than the stages we're talking about.

Am I is really a fairly weak tool unless you start introducing those volumetric additional volumetric software that's not widely available. So then we have Pet scan and Pet kind of came into the picture in terms of Alzheimer's, probably in the early approval of amyloid tracer in Pet scan.

And I tell my patients that MRI is about anatomy, but Pet is about how the brain is working, or in this case, the ability to identify one of the classical biological markers in the brain.

The companies that developed these FDA approved tracers, they were in a bad situation because they made a huge investment. And even though they were FDA approved, CMS had no interest really in creating a reimbursement structure around that.

So we were still stuck for many years without the ability to use amyloid Pet scan in clinical practice. I just wonder if you can talk about that disconnect between the science and the policy, and how that policy affected real world care?

Yeah, I think this is a very important point, and I think it's not unique to just Pet scans. But I will talk about amyloid Pet specifically because I think it was really bittersweet moment.

I think for all of us in the field, right when amyloid Pet first got approved, it was really the first time that we actually see a disease unfold, right?

And like in a living brain. And so decades of science sort of were coming to the table and being brought together in this amazing research. And then the reality was patients just couldn't access it.

CMS at the time didn't cover the scan. And so outside of research, really nobody could get. And I think it's an example of a lot of things in the medical field where you had this incredible diagnostic breakthrough, but something that could finally separate Alzheimer's from other causes of cognitive decline, because not just that you're diagnosing Alzheimer's accurately.

There's other reasons that could be causing cognitive decline, some of which are reversible.

Clinical Challenges in Early Diagnosis

And this technology is sitting on a shelf out of reach. I think the disconnect between science and policy creates a real human cost for all of us. We are very rigorous in terms of how we validate these things.

And we'll talk, I'm sure, at some point today about biomarkers specifically, and how much work have gone into getting these things to the real, to the table.

But at the end of the day, it really affects a lot of things downstream. For example, not having access probably slowed a ton of clinical trials where we would have been able to get the right patients into those trials to see if molecules might actually help Alzheimer's.

So, I mean, to me, that's one of the big lessons of the era is that. Yeah. And that's really why I started building this company, is that innovation only matters when it's accessible.

If we have the cure to a disease, but we can't get to a disease in time, then we have nothing. So I think that's how we push and that's how science is going.

Yeah, it is. And of course, as a neurologist, we had to suffer through many years of the reputation of diagnosed scenarios. The most advancement, I'm sure you would agree in terms of the neurology space has been in multiple sclerosis.

We have a remarkable number of disease modifying therapies to really do, particularly with the B-cell depletion therapies, put a major dent in the progression and the relapse rates.

And people can do extremely well with these drugs, but we're far from it, even with the currently approved drugs on with Alzheimer's. But it's interesting.

A few years ago, when Biogen got accelerated approval of AG helmer aducanumab no longer it's essentially no longer commercially available. I think it is for like compassionate use or somebody who had started on it and they still want to continue with it.

But at any rate, that was more of a business decision than than the efficacy decision to pull the drug that I remember visiting with some of the reps as as Biogen built out their team and they came to my office and they were shocked because I know we haven't quite touched on this yet, but they said at the time there was still no approval.

2 or 3 years ago, there was no reimbursement approval for amyloid Pet. And so we were depending on those of us who were interested in biomarkers were depending primarily on spinal fluid.

And they said we are to side ourselves because we're visiting these neurology clinics and the neurologists aren't doing their own lumbar punctures. So like, how are we supposed to diagnosis?

It was like it was insane. So amyloid is a piece of the puzzle. It probably is not really per se the cause of Alzheimer's disease, but it is a player.

The accumulation of the toxic amyloid, the proto fibrils to mature amyloid certainly may represent part of that pathological process. But there is also another piece that we probably need to talk about, because ultimately, all of this plays into blood based biomarkers.

And that is true. And there we do have tau tracer also for Pet scan another powerful tool. Now it's time for a short commercial break. Imagine a future where brain health is not just managed, but optimized, where the symptoms of Parkinson's, Alzheimer's, traumatic brain injury, stroke, depression, anxiety, and even long-covid can be addressed with cutting edge technology.

That future is here with the new chronic light and the new chronic 1070 nanometer. Photo Bio modulation helmets a breakthrough in noninvasive brain therapy using near infrared light, these devices penetrate deep into brain tissue, stimulating cellular repair, reducing inflammation and enhancing mitochondrial function, research suggests.

This technology can even enhance cognitive performance in healthy individuals, all without drugs or invasive procedures. The neuron 1070 helmet takes it further, offering four customizable operating quadrants ideal for tailoring programs in conditions like stroke or traumatic brain injury.

And with every 1070 helmet, you'll receive a free 30 minute brain health consultation to help you maximize the benefits. Whether you want to support memory, restore energy, or take proactive control of your brain health, neuron technology could be the game changer you've been waiting for.

Unlock the power of light. Heal. Restore. Thrive. Learn more at neuron Dot online. And when you make that investment, be sure to use the code Charlene 100 with a capital S to get your $100 discount.

And let neuron know where you heard about this valuable technology. But here, reimbursement is still essentially nonexistent. I'm curious why you think it Tao, especially as it's emerged in the form of the Delta 217 and the 181.

Why it is that we're struggling so much to get coverage for this? Yeah, this is a great question, and I'm glad you brought it up, because to me, this is at the core of the cutting edge of where we are with Alzheimer's, how imaging it allows us to see not just as an amyloid is there, but really we can see how far the disease has progressed inside the brick.

It correlates much better with symptoms, and I think it's a better molecular reflection of how much damage has actually occurred in the brain. The challenge I think it comes down to the same thing we discussed earlier, which is practicality and policy.

At this point. Yes, it's scientifically powerful, but is it accessible? It's expensive. It requires special equipment to get it done. Right. And it's just at this stage not scalable for the average patient.

And the reimbursement remains limited. And so I think it's just another example of how science sometimes just races ahead of a system that supports it.

And obviously see clinicians, I think if they're educated on this would want to use these tools. But until they're accessible, it's going to really be a challenge for people.

That really is the crux of why I think where we're headed now with the blood based biomarkers. And I think that's everything. And I'll elaborate on that, I'm sure, as we continue the conversation, because it is a huge window of opportunity for us that I'm very excited to at least play a role in some degree.

Yeah. And I know we don't want to necessarily dwell on the perpetrators, but I just I think you're making an important point. And as somebody who sits in the chair of hospital administration, ancillary services and things like that, probably getting a pet and or rather an amyloid entail Pet scan, you're probably talking a lot of folks don't know that these tracers have to be produced at by a cyclotron.

They have to have a certain amount of radioactivity. To ultimately be used clinically is if they lose too much of their radioactive level, they're not useful.

They won't tag what they're supposed to tag in the brain, generally about a three hour window from the time that it is produced and transported to the site to actually be used.

We measure that in Miller Curies. What is the radioactive level of the tracer? And when I had conversations about this, and I'm an early adopter, our local health care systems are now starting to do this.

I said, here's another challenge. You're buying this tracer because that's how it works. And then you have to build it out through those third party payers.

And one person doesn't show up for their scan. You just bought a very expensive tracer where if they're late, or all kinds of logistical issues that are very complicated, that really make the use of these pet based tracers the impractical, in my opinion.

And I think for me, I've used them a lot because I do clinical research. But if it hadn't been for the research and on the clinical side, the community side of my work, I don't use them at all, quite frankly.

But things did change, right? Things we have lecanemab or can be donanemab, which is consumer.

PET Imaging, Policy, and Access Barriers

They both been approved last couple of years and when those got approved, CMS finally came around, said, yeah, we're going to pay for a Pet scan at the beginning of treatment or to justify treatment, and then in about 18 months to make sure that we've cleared the amyloid as we should have with that is the pharmacological target of these treatments.

Hopefully things really changed. And now again, we're in the age of blood based biomarkers. So let's unpack what these tests are actually telling us. We hear terms like the amyloid beta 42 to 40 ratio I mentioned p tau 181 peto 217 or the percent p tau 217.

That's part of the passivity ad to test. Could you help our listeners understand what these biomarkers actually measure and how early in the disease process these biomarkers start to show their rear, their head, so to speak, and become something that's measurable, tangible and meaningful?

Yeah, I think this is probably the most needed answer to your question, because I think a lot of clinicians, all primary care physicians, doctors in general, know very little about these biomarkers.

The language around them sounds intimidating. And so I think the way that I would unpack this is we look at amyloid 40 to 40 ratios, right. Essentially to me that the way that I look at this is that's really the very first signal that there's a protein imbalance that's starting to shift in the brain.

Right. To me. And I view amyloid essentially as like the spark it this early deposition. It can be decades before. And then when we see ratios change, it's probably one of the earliest signs of Alzheimer's when it sets the stage.

Obviously it's an unstable protein. So it's not something that's easy to use as a screener because it's a challenge. To do that blood test, you have to the time matters to what you were saying earlier, the way you spin it down, there's a few things that make that protein not as reliable as we'd like, but that's 4240 when you look at tau and specifically hyper phosphorylation, I think it's much more personal to an individual patient.

And this to me is 181 to 17. Are the current big players 3/17 the one you're in my heart, obviously, but I think those are clear markers that are reflecting how the brain is responding to that amyloid stress.

To me, I viewed Peter 217 as a molecular fingerprint of this entire disease process. It's incredibly sensitive to what's happening in the brain, a good indicator of tangles and inflammation.

And what we're seeing now when you get even more specific into the PD two tests, you're looking at percent. Peter 270 I think we're really trying to quantify Bat signal.

And what they're doing is we're not no longer saying is tau present or not, but how much of it is abnormal compared to what's expected. So I think it gives a clinician a little bit of a readout that can help classify someone's risk.

Is this someone you know showing no signs of pathology, someone in the early biological stages or someone already on those hires can tell you on the reality.

And the remarkable part of all of this is that these molecular changes are occurring often 10 to 15 years, where the memory loss gets significant at this stage compared to, say, we should be testing asymptomatic many.

The academic field is not ready to say that, but I do think we're headed that way. And I think that's going to be the reality of where this ends up. I agree, and maybe a discussion for later.

The most recent guidelines, the diagnostic guidelines, do talk about identifying the neuro pathological changes in folks who are asymptomatic. And what I really appreciated about those guidelines is, of course, you wouldn't diagnose somebody clinically as having Alzheimer's disease if they don't have the critical clinical features.

The amnestic cognitive impairment, the loss of their instrumental activities of daily living. However, again, what I appreciated about it is that you can tell someone that they may be at risk.

And I love saying at risk because at risk inherently implies action steps, right? It means if you're at risk on the right, go left, right, you can do things about it potentially, that may significantly prevent you from ever getting Alzheimer's disease in the first place.

Yeah, truly. And when we talk about an urge and a little bit later, I think I can highlight that as well, quite a bit. That's great. So I know just speaking as a clinician, and of course you and I are specialists, but I get referrals from the primary care arena and these tests are and I'm talking now specifically about the tests that are ordered by physicians for their patients in their office.

But we have LabCorp, we have quest, we have passivity. There's a couple other players out there with using biological markers, some combining them together, some of them individually and I think it must be very confusing to folks, to our own colleagues about what they should be ordering and what is most clinically meaningful and even when to order them.

And again, what we're talking about with neuro gen is a home based test. It's a little different spin on the situation, but our colleagues, I think, really don't have all the information that they ultimately need to provide a test to their patients that gives them the most degree, the greatest degree of clinical accuracy.

I think in my discussions around the country, as me and my team built Virgin, it was incredible to see the gaps. There's no uniform knowledge surrounding these biomarkers.

You have pockets of people that are doing their own thing and trying to figure out. I think the first stage or clinician is ask yourself, what are you trying to achieve with this test?

And what I mean by that is, are you doing a top level screen where you're triaging, which is a lot of what we do in Oregon, which is that sort of top of the funnel early, early flashing yellow light, so to speak, for lack of a better trend.

Are you trying to diagnose those two very different things? And so I think when you look at a diagnosis of Alzheimer's based on the biomarkers, I think the closest we are to that to a true confirmatory test outside of Pat and CSF is probably I'm sure we have the approval from from you Rubio.

And then we have and then I would say see Joanne's work is really strong. It's strong test. The problem is those tests are hard to scale. They're hard to scale for two reasons.

One, on the Fuji Rubio side, you have the instability of the proxy, the pictures I mean, part is okay, the other part is unstable and hard to really do it at scale.

And you have to really be a clinician who orders it, and then it has to be done at the right time in the lab. And then obviously Mass Spec, which is what she does and uses, is again, very challenging the scale.

It's very hard to run in a high throughput way. So I would say to clinicians, if you wanted to really assess and start using biomarkers in a way that is meaningful to your patients, from the PCP standpoint, I would say the view there should be more triaging, right?

Let's just see. Is this patient at an elevated risk. And to me that's a simple pitch out to 17. That's what we offer an urgent level. And that gives us that top of the funnel. Right.

We bring somebody in, we get a flashing yellow light. Okay. There's something here. Doesn't mean they have Alzheimer's. You don't make that diagnosis. Alzheimer's. Dementia is a dementia.

And all we're looking at is a blood test at this point. So there are patients that will end up with elevated peaked out or 17 who don't go on to develop significant memory loss.

So that flashing yellow light is where you start. And then I think you funnel people down into more detailed confirmatory testing. And that's how we built the ecosystem.

But the reality is, when I initially started the company, my idea was just do the F blood tests. And then I realized very rapidly, the bigger piece was the entire ecosystem having every step of the network in place for the education of patients, and then also downstream after that, those high risk patients into brick and mortar neurology practices around the country.

With the Merge and Diamond network, where we knew those clinicians would do confirmatory testing, would potentially get somebody in the trial, potentially treat them.

That's really then, I think, the holy grail. And so that's how I approach it. It's prevention contribution and then it's confirmatory. And I think you have to order biomarkers based on what you're trying to assess.

And just for clarity, say for forensically probably the strongest biomarkers are the p tau biomarkers. Here's some subtleties between 181 and 217. The amyloid 42 to 40 ratio informs that.

But I wouldn't personally as a clinician rely on that solely at all. And I did want to bring up a couple other biological markers that I think our colleagues will hear about.

And they've really been in use in clinical research for a long time and not exclusive to Alzheimer's. And that is neuro filament light chain and glial fibular acidic protein, or GFP, because I do see them from time to time, combined with the more specific biomarkers.

First of all, I love that you're asked this question because my first exposure to biomarkers when I first started my research was neuro filament light.

So that's a marker that I love and know very well. And when you look at this and you will see this and clinicians will run across these two markers. So the way I would assess it in relation to Alzheimer's is this I view Alzheimer's

biomarkers as essentially an orchestra and amyloid and peak hour 217 p21.

Those are definitely the lead instruments in the orchestra. Right. They're providing the melody of the disease now neuro filament light.

Blood Biomarkers and What They Measure

In fact, I would consider them almost like the rhythm section in the background. They're telling us essentially how the whole brain is responding. And what I would say is, when you think of neuro from the light.

So it's clearly a marker of neuronal injury. When you have stressed brain cells or cells that are breaking down, you start to increase your neural filament light levels.

The problem is it's really not specific at all. Right. You see it elevated in a variety of things. My research and it was in multiple sclerosis a ton.

But yeah. So elevating Alzheimer's will elevate Ms. or elevate with traumatic brain injuries normal aging. So there's a lot of caveats to using that. So you just have to use it in the context of okay I have for example elevated Pikachu 17.

Yeah. In a patient with memory loss. And we have some NFL changes. Maybe that's meaningful. Maybe it gives you a sense of the temple of what's happening. Right.

How fast that damage to current. Now Jeff app I think people know less about. So it's a it's an astro protein. And obviously astrocytes are super basically the support cells of the brain.

So when you see an elevation of fat, I think it's really an early sign of inflammation or astro glial activation. It tends to rise even before tau does in some patients, which means it might be one of the earliest warning lights, but again, nonspecific and more supportive of stuff as opposed to the PD 17 is quite specific for Alzheimer's, where if you have an NFL, are much more broad based and elevate with a variety of other diseases.

But I do think they're meaningful at interpreting the bigger picture. And eventually we'll get so good with that that we'll understand what goes ratio's look like, how to use NFL as opposed to just a gut reaction to an elevated level, how to use it clinically.

But it's exciting to be on this path. And for me and probably for you, you're someone who's been in the functional, health, really preventative care field.

Neurology one of the few. It's exciting to at least know that where we're moving towards, right? See them as reflecting like the pace of neurodegeneration in the brain.

So you would never want to use that as a sole diagnostic test. I will say I have used it very cautiously in very specific situations where there's really an absence of commercially available biomarkers.

And I'm really broadly asking the question, are we dealing with a neurodegenerative process, for example? But I'm not depending on the results of the test to make a specific diagnosis, I already have to suspect that diagnosis.

And here's another piece of the puzzle. Neuro gen biomarker and EU are again for those who want to write it down gen biomarkers and you this is your company.

This is your baby. You saw an opportunity to bring Alzheimer's testing out of the clinic and into the home. And I'm wondering what inspired you to create this company and what gap were you trying to fill?

Yeah. So what happened is I was a hospital administrator and a practice neurology, adult urology practice had done research. So for me, I turned career.

I broke it into three buckets. My first one was true clinical, where I saw the pains of these diseases in everyday people every single day. Built a very large practice with great partners that we do some amazing work and it's a great group still standing.

Then the research side with biomarkers became really my focus on my love. I still remember the first time experience and use single market, very technology.

And I was like, this is the future of neurology. This is where we have to go with this, the reality. And then on the hospital side, I saw the reality, the throughput issues.

I saw that for every ten patients coming in for memory loss to a neurologist practice, eight of them had had no neurodegeneration. It was polypharmacy with sleep apnea.

It was something that could have been handled at a PCP level. So what was happening was neurologists were just plunked with patients that really didn't need neurologists, other than a tap on the back and a couple of recommendations.

So when the drugs came out, when we first got amyloid therapy and amyloid therapies, I realized the uptake of these patients is very small. The number of active or in the US that are treated is still tiny compared to where.

I'm not saying everyone should be on these agents, but that meant that we weren't getting to them in time, and they were coming to the neurologists way too late.

So my first the first problem we wanted to solve was, all right, how do we detect this disease as early as possible, knowing that human behavior hates that?

If I don't feel something, it's hard for me to consider doing anything about it. So you're dealing with human psychology where someone has minor symptoms.

At this point, we're not testing asymptomatic yet, but like young people have minor symptoms and you're trying to figure out how when you actually can make a change in their disease, how do you get the blood test just to see if it's possibly something wrong?

So that was the impetus for me to build the company. It's morphed into this incredible ecosystem. When I realized two days, I realized how many people wanted to know, which was incredible.

People are dying to get our test. So I think 80, 80 some percent, I think, was the recent poll of people who would who wanted to know. So people want to know.

And then the second part was, how do you do this intelligently? And ethically and in a scientific way, where the rigor is extremely high? This is not a test in my eye that should just be flying off the shelves with no clinical infrastructure around it.

I think it's dangerous. And so that's really where it came from. And so we started with the affluent care. We were able to get that piece validated and approved, and we'll put some IPR on that. We have.

And then we added the digital cognitive assessment because you want to know where these patients were. Was it mild amnestic MCI was it issues. It gave us a clinical picture.

And then what we did was the most important piece was put the telehealth neurologists. As our educators, we went with a telehealth board certified neurology team that we educated on the markers.

They got the pass through our network to even be allowed to provide this information to patients, because they have to understand the nuance of the test.

You have kidney disease. Have you had a recent stroke? Have you had a heart attack? Give me cancer. All these delays can affect your patella. So what ended up happening is really a beautiful system.

And I remember when we did our first 200 people through the system, we had about 20% positive rate. And I sat in and listened to those patients that with the neurologist and I sound like a fly on the wall.

I just wanted to see and it was something out of a movie to me again, like, I can't even explain it. These were people who were still in the workforce.

They were handling their finances. They were having some memory issues, and they were covering their brains recovering. And they were. And we caught them. Really?

Now these were actionable patients. It's when I that was that eureka moment. When it finished. I remember like, we are the team. I was like, there were mice or motion.

I was like, this legitimately changes the entire scope of how we approach all time. This is going to change how all hammers is treated, how we manage it.

Scale. It's been a labor of absolute love. Didn't set out to do it. I wanted to do is not have pathology 17, which is a great screening test. Sit on the nerves while people argue and put on PowerPoints.

That's what I wanted to do. Let's take a short commercial break. Looking for a natural boost to keep your brain sharp and your body energized? Discover every day dose the ultimate coffee alternative packed with lion's mane and chaga mushrooms, collagen and l-theanine, this creamy blend supports focus, mental clarity, and overall wellness without the caffeine jitters.

But coffee is not your only option every day, dose also offers a premium ceremonial grade matcha sourced from Kagoshima, Japan, and infused with the same ingredients.

Whether you go for the mushroom coffee or the matcha every day dose makes fueling your mind and body a breeze. Taken together, every day dose has the potential to support memory, focus, sleep, nerve regeneration, gut health, immunity, and reduce inflammation.

While the collagen gives you healthier skin, hair, nails, joints, and bones. If you like, give either of these great products a try every day. Dose will send you a free starter kit when you purchase a 30 day supply of coffee or matcha tea, just use my link to see WW every day.

Dotcom forward slash healthy brain and make healthy brain an all capitals with everyday dose. You can drink smarter, feel better and power through your day naturally.

I love this stuff I do. I'm gonna have some right now. Walk us through this. Very practically. Who's the ideal user? What is the journey look like from the moment?

Maybe I'm the right person to be doing this task to I order it to. I ship it somewhere. And what happens? Yeah. So it's a lot of infrastructure, I'll tell you that.

It was not easy to build this. It's it's sound. I make it sound very simple, but there's a lot of pieces to the puzzle. But essentially, number one, we needed it to be consumer directed.

So we wanted people to be able to requested. We wanted the people who had some concerns about their loved ones memories or their own memories to be able to start somewhere, like, just start here and I want you to think about rural AI.

I want you to think about the middle of mountain. All right? You and I are physicians. We can find the best physicians, their friends. There are text message away, if you know, but most people can't do that.

That's not a luxury. Most people, when you come to the website, you order the kit. There's a series of questions that we ask. We don't test people under the age of 40, so it's 40 and above.

If you have a direct family history of early Alzheimer's, so 40 to 50, you have to have some indication within your direct family of early also, and you have to have memory loss, some type of memory, subjective or objective memory loss.

And then it's 50 and over with subjective cognitive issues. So we ask a series of questions that sort of assess cognition and all of that information then goes to our neurology team and they either approve or don't approve the test.

So we have a checkpoint there at the beginning, because what we don't want is 18 year old doing this test or a 30 year old who we know is going to. And that's just young people's mind.

So we just said, Dagwood, that we're not doing so. It's the right patient, not one. Then with the big ticket to their home, the blood test is done at home at your convenience.

It's the idea here is we know you're probably still working.

Building a Home-Based Testing Pathway

We know you're probably have kids, or you may have children or that are in college, or maybe high school, late high school. And we know your life is busy, and we know that if we don't make this as easy as possible for you, it's unlikely it's going to happen.

If I have to make you go to a lab or go to your doctor, it's going to just decrease the number of people rejection. They then have a portal when they do that.

Digital cognitive assessment takes about 7 to 9 minutes depending on the patient. Gives us a really good indicator of the top level where they are cognitively.

And then all of that information comes together. Now, we do have a central campus certified lab for the whole country. So New York included, where we do our testing in Houston and everything goes there.

But the beauty of it is we've democratized this innovation. It can be done in all of Iowa. They have a telehealth neurologist with them from wherever who can guide them.

And they might have to drive a few hours if they're positive, but we at least have found them early and we tell them where they need to drive to. So this is where we recommend you go now.

And so we hand that off. And then the clinicians make their final decisions. Obviously at the brick and mortar practices there's a lot of sort of pre-qualification.

We're very careful. We there's a lot of communication that has to happen because to your point, you could test positive for a biological marker. You may never get the disease itself in a pretty early phase of the subjective cognitive decline in my practice.

But I'm very cautious about communicating because the last thing I want somebody to do is get a positive test for Alzheimer's disease and jump off the top of the tallest building in town.

And I think, of course, not to take anything away from neurogenic or any other company in the biomarker business, but we I think both of us would like to emphasize that even not everybody that tests positive for biological markers ultimately develops the disease.

So I definitely want to partner with an expert and be able to understand in context what's going on, and then really

embrace the belief that there are a lot of options for, especially today and hopefully even more moving forward with things.

I am curious about this network and how folks are informed of the results and how they're triaged from there. You've touched on it a little bit, and our mutual colleague Barbara Pickett, who I think works very closely with you on this, have discussed it.

But I think folks really need to understand what that looks like. Yeah. So what we've done is we've divided the country up into quadrants and within each quadrant we partner with what?

With what? With what we have is which is emergent diamond network. So emergent diamond network practices or practices that we assess for capabilities for innovation in Alzheimer's.

Meaning that they're practices that have to meet certain criteria and that can be clinical trial access, that can be disease modifying therapy access, Pet scan access.

They have to be so and so. We basically break the country down geographically. And we have pockets. And now we're expanding it even further. So obviously as we scale the company it will go.

Right now it's pocketed within quadrants. People might drive targeting bigger cities targeting. But what we also look at for example, in Oklahoma, let's say we get orders from 200 miles up 200 mile radius in Oklahoma.

Where's our where is the where's our practice for two? That are at least on the cutting edge or innovative enough to consider therapy if they see the right MCI early 80 patient who test positive on Pet imaging confirmatory testing, which is really rare because that's one of the bottlenecks that we are seeing, is we have this flu of positive patients that we are getting into practices, and Pet scan access is very limited around the country, and we're now starting to tackle that as well.

We just that we have to solve this problem too. And so as a company, we're looking at how can we bolster that as how can we do Pet scans around the country to get confirmatory testing in a way that's controlled?

Is it, you know, nerves and directs where we actually have freestanding Pet scan units strategically placed around the country. The reality with that is you invest in that.

And are we steps away from one of these blood based biomarkers knocking pet off and not being pet, not being required? I don't know if we're going to get there soon, but eventually we will I think, oh, I very much things.

So I've had that conversation with C-2 in and I authored a couple papers with them, and one conversation was I was still doing lumbar punctures. And who said, do you think you're going to get to the point where you're just going to use this in-office blood based biomarker test?

And I said, well, I love the test, but gosh, I don't know that I would rely on it 100%. Fast forward to November 2025. And yeah, I have access to Pet scan, but the test is incredibly useful and I do find it completely validating.

And for the most part, it's made pet in my clinical practice. I won't say obsolete, but unnecessary for the most part. So it's been great, right? I would agree with that.

And one of the things for me is the way that I view how I believe Alzheimer's, how we should approach this as an Alzheimer's neurology group. I believe very heavily in situation in us, in our triaging of patients.

I would love all of them, the positive ones to go into and get confirmatory receipt. You. And to me, that's the pathway that I believe we need. And the reason I believe that is I think it's a great test.

I just think you got to get the right patient. It's not our entry point. It's very easy. And now imagine us funneling all the right people to secure the instead of a 100 people, 80 of which are going to be doctors.

17 negative. Anyways. Are you have those 20 people that are positive going and getting a much more detailed biomarker analysis procedure right at a fraction of the cost.

We start and then we were able to and now that allows us to go to the 40 million people we're trying to target, the 40 million Americans with memory loss over the age of 45 or 50, who don't know what it's from.

So we're able to get a look under the hood at the top level and then funnel things down. But I'm very excited to see where we go as a community in this state.

I don't think we should be. I don't look at them as competitive. I look at the opposite. Actually. I think CGM is a phenomenal test. It's just not something that you can do it.

Still, it's just one of those. And I again, correct me if I'm wrong, this was just a previous discussion with Doctor Pickett, but that your test can be done in a way that's anonymous.

Is that correct? From because we are consumer directed, it is the consumer's debt. So one of the things that people don't realize is that biomarkers are not protected, like genetic testing is under gene.

When you look at insurance companies and what they might do long term. So there are some magical concerns surrounding this data. And obviously there are teams working at the governmental level to get this information protected.

So you can't be biased versus people who have an elevated out to 70 in terms of insurance and so on and so forth. It is the patient's information. So we leave it to the patient, even if the patient agrees to be referred to a neurologist, if they're elevated and we recommend neurology, they said, yes, I want to go see urology.

The patient has to disclose the lab test to the neurologists. The neurology team knows that they're emergent patient coming, so they probably know it's an elevated P2 17.

But we don't put that in the chart for patients purposefully. We want the patients to be empowered and in control of their health. And we have to be thinking about the governmental side of it and the protections that are needed for citizens when it comes to this stuff, because it can get really scary if you do a blood test that it predicts a disease in 15 years, for example, eventually, what does that mean for you and your ability to be treated equally as a citizen and now there may be some neurologists who are listening to this podcast if they wanted to become involved, because I'm sure you need.

There just aren't enough of us in my town. You could wait months to years to get into neurologists. How can neurologists become part of your network? Yeah, that's a great question.

So where we are proactively now building out neurology practice, building out that the nurse environment team. So we are proactively reaching out to neurologists explaining what's going on, welcoming them, asking if they want to come in.

A lot of them are academic partners now, but we're doing it with private practices now too, that have, you know, robust practices that run a really good neurology.

And we want more. We want as many as we can get the first step that I would say is on the website, you can email our support team and we'll reach out right away. So if you're interested or you're somewhere in the country, we need your help.

The reality is you get a real neurology patient. You have a patient at your doorstep. It's not going to be managing depression and pseudo dementia. It's going to be someone that you got to work out that may have disease.

And I think most are all just that's what they want to do. We want to practice neurology. We want to take care of people that have neurologic illnesses.

And instead of seeing ten patients, two of which may have an urgent condition in a day, we won't see ten actual neurologist patients where you can impact their life in a very meaningful way.

I'm very proud to say proof of concept for us has been incredible. So we have been able to get people from end to end. And many of them now are. There's a landslide of people going on disease modifying therapy, our screening tests, they ended up getting them to a neurologist, practice one of our diamond network practices, and then they're even developing their own neurogenesis within the practice, not where an NP might see the patient first at intake.

They get through cognitive assessments, whatever they use, you're on there immediately getting Pat done. And then they follow up with the physician and they're ready for treatment potentially.

So it's really been fun to watch the practices respond as well, because a lot of the practice are like, this is a great pathway for us. This brings us the right neurology.

Prevention, Lifestyle, and Closing Remarks

And those patients, even in the reality system, needs these patients long term as well. Neurologists want all their patients. And yet you're running the business as well.

So it's there's no margin to a neurology practice. There's no mission. So you have to and so obviously getting people on treatment infusion chairs are being filled.

There's Pat imaging. There are reimbursable events that occur to get these patients. And the other piece of it that I'm very passionate about is there were a handful of us out there who believe that most of the diseases we deal with, including Alzheimer's, are largely preventable, that there's a huge impact of diet, lifestyle and environment.

And you have people like Rich Isaacson out there, calls himself a preventative neurologist. He's trained another doctor out there who says she's the first fellowship trained preventive neurologist.

A part of my practice is preventative neurology, and it's a wonderful thing to see, especially when we can track things using biological markers that actually show that the action steps are being taken, are making a big dent in those neuro pathological changes in the brain.

And so I'm wondering is, do you see this at least if not now, hopefully in the next 5 or 10 years, as this interest in lifestyle medicine and systems biology really takes off, that your test will be a centerpiece for a lot of that.

I think it's going to be a massive flashing yellow light for people. And to your point, we know the lifestyle modification changes and how powerful they are in the Alzheimer's world, right?

We also know the vascular risk modification. If you actually tackle that aggressively and appropriately, even if you have Alzheimer's, it slows it down substantially because obviously blood flow matters significantly.

That's why exercise helps so much. And so I think to your point, we're entering into a new era on health care where digital health, it's precision health, it's individual.

Each person's measuring their metrics every day and understands the effects of exercise on their heart rate and the effects of their sleep and so on and so forth.

I think we're going to do the same thing in neurology. So there is an entire burgeoning field kind of longevity and prevention, which I think is not pseudoscience.

I think it's very much needed and scientifically based. So I'm very excited to see that piece come up as well. Okay. We would love to feed these people into that and get them.

That's the best. You know, we can give anybody honest. Oh yeah. And obviously a subject for several more

podcasts. But I want to just seed that a little bit from folks who are maybe taking a few notes or are going to look at the show notes.

This morning I was reviewing some of the data that's come out from what's called the finger study. Looking at the huge impact, particularly of optimizing omega three fatty acids in the brain, both from a cognitive perspective as well as literally growing new brain tissue, expanding cortical thickness, and so forth.

As a result of optimizing these omega three fatty acids, other things being important, B vitamins also, and some antioxidants. And I'm not telling people go out and take a bunch of supplements.

I'm just saying there definitely are things out there that can be done and then hand in hand with that. Recently reviewed a lot of the data coming out from your city of Chicago.

The Super Agers data from Northwestern University has profound and really shows that even if you have innate belief for a gene, and you may even have those neuro pathological changes in your brain that a percentage of individuals will actually resist developing the clinical disease.

So tremendous amount of help out there. Very exciting. It's a fun time to be in the thick of my career, like where I am in my career because of where the science is right now, because I feel like there's so many opportunities for us to leave an imprint that can help people.

And we're starting to feel that shift in Alzheimer's, much like we did in multiple sclerosis in 2010 when Genea came out. Leading up to B cell therapy.

So it's an exciting time, I think, for all for neurologists. Doctor Burchard, it is really inspiring to spend time with you, how you're setting an example of science and technology and compassion, and bringing them all together to truly help folks out there who are in need.

I truly appreciate everything you've done and spending the time with us on the Healthy Brain Toolbox podcast. You. It's fantastic! Thank you so much for the thoughtful questions. Is great. You can.

Hi everyone. Doctor Ken Charland here with the Healthy Brain Toolbox. I'd love to hear from you if you have General questions about brain health, neurology, or the science of keeping your brain sharp, send them to questions at Healthy Brain toolbox.com.

I'll be reading your questions on the upcoming episodes. Please remember, these need to be general questions. Can't answer personal medical questions, or provide individual medical advice.

So if you've ever wondered about brain health strategies, lifestyle tips, new research for the future of neuroscience, send those questions in. I look forward to hearing from you.

And who knows, you might even hear your question featured on the show. Thank you for tuning in to the Healthy Brain Toolbox podcast. I hope today's conversation gave you new insights to protect and nourish your brain.

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