Hormones, Fatigue, and the Brain: Dr. Robert Hedaya Returns

Why Your Stroke May Not Be Causing Your Brain Fatigue



For a long time after my brain surgery, I assumed my body worked like this: the stroke happened in my head, so whatever went wrong afterward would also happen in my head. Fatigue, brain fog, slow thinking all of it filed under "neurological," all of it explained by the injury I already knew about.

That assumption turned out to be wrong, and the way I found out was almost accidental. About eighteen months after my brain surgery, I had thyroid surgery to remove a nodule so large it had pushed my windpipe and esophagus six centimeters out of place. I had no idea it was there. No lump I could see, no difficulty swallowing or breathing that I'd noticed. It was found only because I had a chest X-ray to rule out an infection, and a doctor spotted something that had nothing to do with why I'd walked in.

What followed was a slow, confusing recovery from that second surgery, and a wave of fatigue I automatically blamed on my brain, because that was the injury I already understood. It took time to realize the fatigue might be coming from somewhere else entirely: my thyroid.

Hormones and Stroke Recovery: The Connection Nobody Talks About

I brought this experience to Dr. Robert Hedaya, a Clinical Professor of Psychiatry at Georgetown University Medical Center and a pioneer of functional medicine psychiatry, to understand what actually happened, and to ask a bigger question: how many other stroke survivors are dealing with fatigue, brain fog, or mood

changes that they've written off as "just the stroke," when the real driver is a hormonal system that's quietly stopped working properly?

Hormones and stroke recovery turn out to be far more entangled than most of us are told. As Dr. Hedaya put it plainly: the brain is a hormonal organ. Thyroid hormone, cortisol, testosterone, estrogen every one of them acts directly on brain tissue, and every one of them can be knocked off balance by the stress of a major medical event.

Why "Normal" Thyroid Bloodwork Can Still Mean Something's Wrong

One of the most important things Dr. Hedaya explained is that a "normal" TSH result doesn't rule out a thyroid problem, especially after a stroke. TSH is a signal sent from the pituitary gland, and if a stroke has affected the brain's signaling pathways, the pituitary itself may not respond the way it should. A survivor can have genuinely low thyroid hormone while their TSH sits comfortably inside the standard reference range, because the system responsible for raising that number in response to a deficiency isn't functioning correctly.

He also raised a striking data point: population studies suggest the average TSH in a healthy population is closer to 1.4, yet most labs still use an upper reference limit of 4.5, a range wide enough, statistically, to miss a real problem. His advice for survivors going into a GP appointment: ask specifically for TSH, free T4, free T3, and reverse T3, not just the standard single-marker test, and come prepared with symptoms written down if a doctor pushes back.

A Nodule That Grew in Silence

The brain is a hormonal organ. It's an immune organ. It's a neurological organ… there's not one hormonal axis when it's abnormal that cannot cause neurological or psychiatric problems.
-Dr. Robert Hedaya

My own nodule is a case study in exactly this kind of silent progression. Dr. Hedaya explained that because it grew inward rather than outward, it never created the visible lump most people associate with a thyroid problem, and because it didn't press on my vocal cords or laryngeal nerve, I never developed

the hoarseness that might have flagged it sooner. My body adapted gradually, and the fatigue that eventually surfaced was easy to misattribute to the injury I already knew I had.

Cortisol, Stress, and the Difference Between Pain and Suffering

Beyond the thyroid, Dr. Hedaya walked through the role of cortisol, the body's primary stress hormone, and why survivors often struggle to answer a deceptively simple question: "Are you stressed?" His distinction between pain and suffering is worth sitting with: pain is often unavoidable, but suffering is shaped by the story we tell ourselves about a situation, and a stroke can compromise the very brain systems that regulate that stress response in the first place.

Testosterone, Estrogen, and the Brain's Need for Hormones to Rewire

The conversation closed on sex hormones, testosterone and estrogen, relevant to both men and women, and their role in neuroplasticity. Dr. Hedaya drew a direct comparison to adolescence: the teenage brain rewires itself while hormone levels are surging, and the same principle applies after a stroke. A brain trying to rebuild pathways needs adequate hormonal support to do that work. Without it, recovery can stall in ways that have nothing to do with effort or physiotherapy.

What You Can Do About It

If any of this sounds familiar fatigue that doesn't track cleanly with other recovery milestones, or symptoms a doctor has waved off as "just stress," Dr. Hedaya's PNIE (psycho-neuro-immuno-endocrinology) questionnaire is a useful starting point.

PNIE Questionnaire download: https://drive.google.com/file/d/1S7kC5uMFgBfS-gWcUOIHp0kOjGnrzZK5/view?usp=sharing

If thyroid function specifically is what you're navigating, the earlier conversation with Dr. Elena Zinkov, "Stroke Fatigue and Thyroid," goes deeper into that piece

(https://recoveryafterstroke.com/stroke-fatigue-and-thyroid/). And for more from Dr. Hedaya, the first conversation on photobiomodulation and stroke recovery is a good companion listen (https://recoveryafterstroke.com/photobiomodulation-stroke-recovery/).

Getting your body back after a stroke is rarely just about the brain. My book, The Unexpected Way That A Stroke Became The Best Thing That Happened, goes further into the mindset shifts that came out of my own recovery (recoveryafterstroke.com/book). And if this podcast has helped you, you can support its continuation at patreon.com/recoveryafterstroke.

This blog is for informational purposes only and does not constitute medical advice. Please consult your doctor before making any changes to your health or recovery plan.

Hormones, Fatigue, and the Brain: Dr. Robert Hedaya Returns (Interview)

A baseball-sized thyroid nodule hid in plain sight after Bill's stroke. Dr. Hedaya explains the hormone testing every survivor should ask for.

Support The Recovery After Stroke Podcast
Bill's Book: The Unexpected Way That a Stroke Became Thethe Best Thing That Happened

Highlights:

01:45 Hormones and Stroke Recovery
02:11 Understanding Thyroid Function and Its Impact
17:07 Navigating Thyroid Health with Healthcare Providers
27:09 The Role of Stress and Cortisol
39:09 Nutrition's Impact on Brain Recovery

Transcript:

Hormones and Stroke Recovery

Bill Gasiamis (00:00)

And they noticed a massive lump in my throat and my esophagus and my windpipe were pushed six centimeters.

And they said to me, well, can you swallow? Can you breathe? Can you do it? And I was like, yeah, I'm all fine. There's nothing wrong with my throat. that was the first sign that there was something wrong with my thyroid

Bill Gasiamis (00:19)
Welcome back to Recovery After Stroke. I'm Bill Garciamas, and today I'm joined again by Dr. Robert Hedeya, clinical professor of psychiatry at Georgetown University Medical Center and a pioneer of functional medicine psychiatry, whose highland approach to brain health first brought him onto the show for our conversation on episode 404, where we discussed, amongst other things, photobiomodulation, a type of transcript.

cranial laser therapy helping some stroke survivors recover lost function. He's back today for a conversation I wanted to have for a while, the hormonal side of stroke recovery.

We're going to talk about thyroid function, cortisol, and stress physiology, and sex hormones like testosterone and estrogen, and why every one of these systems can directly affect how well and how fast your brain recovers.

I'll also share my own story of a thyroid nodule that grew undetected, which was discovered after my brain surgery completely by accident.

if this conversation resonates with you, my book, The Unexpected Way That a Stroke Became Thethe Best Thing That Happened goes deeper into the mindset shifts that shaped my own recovery. You can find it at recoveryafterstroke.com/book. And if you'd like to help keep this podcast going, you can support it financially at patreon.com/recoveryafterstroke.

Bill Gasiamis (01:46)
Robert Hedaya, welcome back to the podcast.

Dr Hedaya (01:49)
Thank you for having me, Bill.

Understanding Thyroid Function and Its Impact

Bill Gasiamis (01:51)
thank you for being here. The last conversation we had was very well received. And it's always difficult in a one hour interview to ask all the questions that we could possibly ask about the brain and stroke recovery and all the things that people go through. And…

I've got a lot of other questions that are related to the brain and the link between other parts of the body and the brain, because we have this sense. Well, I did at least when I was first diagnosed that whatever happens in my head is kind of isolated, that it just impacts my head. But there seemed to be some other impacts and cascading effects.

that were occurring, uh, that I didn't know were linked to the brain injury,

Dr Hedaya (02:45)
Yeah.

Bill Gasiamis (02:46)
maybe indirectly, but they were perhaps. But one thing specifically that happened to me about, uh, 18 months after my brain surgery was I had thyroid surgery to remove a nodule on my thyroid. And when I was going through the recovery after that,

surgery, I noticed that I had fatigue and I thought it was neurological fatigue related to my brain surgery. But it took a long time to develop an understanding that perhaps that batch of fatigue was related to my thyroid. And then that got me thinking all sorts of things. know, if the thyroid also causes the same neurological fatigue that

brain injury causes, what people might be missing this in their healing from a brain injury, they might have a compromised thyroid and not know about it. So the first question is, what is a thyroid? What does it do? And why does it cause neurological fatigue?

Dr Hedaya (03:54)
Okay. So thyroid gland sits in the neck, right? There's two lobes, there's one on the right, one on the left, a little kind of island in the middle called the isthmus,

and and it controls many functions, metabolism overall, energy overall, just broadly speaking. now it affects the immune system. It's affects the nervous system.

It affects the gastrointestinal system, it affects the muscles, it affects the heart, right? It affects the skin, it affects the nails, it affects the hair. You know, and I could go on and on and on. Okay?

Bill Gasiamis (04:34)
Wow.

Dr Hedaya (04:35)
Now the interesting thing about this is that this be a little technical, but the thyroid puts out a hormone called T4 or thyroxine, and this is a little molecule with four iodines in it on it, and that

Gives you about 20% of the activity of your thyroid hormones in your body. But then that T4 goes all over the body to different tissues, and each tissue can has its own system to change that T4 into T3 by removing an iodine. T3 has 80% of the thyroid activity. So that means each tissue in the body can control how much thyroid it.

It's using and needs, right? And and has available to it. Okay. So that means the brain, the heart, the liver, the lungs, every tissue has its own enzyme that allows it to kind of modulate how much thyroid, right? Now, so why does that cause neurological fatigue? Well, thyroid in the brain affects neurotransmitters like adrenaline in the brain, which is called nor norepinephrine, noradrenaline. in order for that to work.

The T3 has to be in the right amount for the receptors for the noradrenaline to be structurally correct so they can transmit the signal. It's necessary for production of energy in all the brain cells. It helps the immune system in the brain. It carries molecules from here to there in the brain. it affects serotonin transmission in the brain, so mood regulation, anxiety, obsessiveness, depression.

You know, those are just some of the functions of the brain, but it affects every cell in the bane in the brain. So you're gonna, if your thyroid is off, most likely you're gonna have some kind of brain problems, particularly, you know, when your thyroid is off, the tissues in your body that are most compromised or most

stressed, that's probably where it's gonna show up, right? And in the case of stroke, that's where it'll show up.

Bill Gasiamis (06:44)
So it's possible then, is it possible to overlook it? Is it very obvious that your thyroid is out of, well, is dysregulated or is not working properly?

Dr Hedaya (06:56)
Well, in general it's easy to detect. And if you want, I'll tell you how. So

Bill Gasiamis (07:04)
Yeah. Tell me how.

Dr Hedaya (07:07)
so there's some blood tests that are simple and then s some symptoms. so for most people this holds. When your thyroid is low, you know, you're gonna be cold easily, you're gonna have dry skin, brittle nails, hair will fall out.

Muscles will be weak, thinking will be slow, movement will be slow, getting up from a chair will be more difficult, going upstairs will be more difficult, your heart rate will slow down, you'll be constipated. Those are the most common symptoms. If your thyroid is overactive, then you could be have palpitations, oily skin, acne, oily hair.

Diarrhea, you know, kind of the opposite. The thing that's a little confusing with the thyroid is sometimes overactive thyroid can show up and look like it's underactive symptomatically, or vice versa. So you really need the labs. And the labs are TSH, which is thyroid stimulating hormone, and that's tells you what the brain is doing. And then free T4.

That's the amount of T4 that's kind of floating around free, not bound to protein, so it can actually do its job. The way I think of it is like, you know, a lot of the thyroid home is sitting on a bus. It's not free, it's bound to protein. Can't do its job. But the stuff the thyroid this that's out of the bus or not on a protein, that can do its job. That's the free T four. And then the free T three, right, which carries eighty percent of thyroid activity.

And then the last one is a reverse T3 because sometimes if your tissues in your body are making too much thyroid or getting too much thyroid, they'll actually,

instead of taking the iodine off the T4 molecule on the right side, they'll take it off on the left side, or vice versa. So they make a fake T3 that doesn't work. And this way they short circuited okay, you got all this T3. Well, let's make it into a fake, fake T3 so it can't do anything.

So reverse T3 is also very important. And then you want to measure body temperature. Usually it'll be low. And then, you know, a physical exam. Those are the ways to do it. If you wanted to go even deeper, you could do some genetic testing. There are genes that will tell you whether you're converting the T4 to T3 in the brain.

Adequately, or maybe you're more likely to be slow in that regard. So you can have normal numbers in your blood, but your brain might be hypothyroid, right? And there are actually a lot

Bill Gasiamis (10:05)
Uh-huh.

Dr Hedaya (10:05)
of studies showing that hypermetabolic, like high doses of free T3, actually reverse treatment-resistant depression because it's it's thought that there's a local in-brain.

hypo-low thyroidism. You can have low thyroidism in your heart, in your muscles, but not in the other tissues, you know, because I told you every tissue can control how much it's making. So if you have a genetic vulnerability, then you you might more be in general be more likely vulnerable to depression or to ADD or to anxiety, things like that.

Bill Gasiamis (10:42)
Wow. Are you blowing me away? I didn't expect to hear any of the things that you just said. X. Um, some of the things that you described, the, uh, some of the symptoms that you described, had those intermittently in and out all the time, other than a thyroid nodule, which is what I had, which was obvious on a scan.

Dr Hedaya (11:05)
Yeah.

Bill Gasiamis (11:06)

What other things caused the thyroid to not function?

correctly. So is there lifestyle factors that interfere with the thyroid gland and therefore, you know, then have the cascading effect and take off, take all those other things or some of those other things offline.

Dr Hedaya (11:28)
So there a number of causes, right? So first of all, let's take someone who has had a stroke or chronic illness, right? So you're under stress and that affects your stress hormones, your adrenal glands, cortisol, etc. Well, if your adrenals kind of poop out, then maybe your body says, Well, I can't handle all this thyroid, even though the amount is normal, it's like too much. I can't handle it, so it'll make less thyroids. Now you

develop a hypothyroidism. You could develop it just because all the chemicals in the environment, the ha the hormone interrupting chemicals, there are hundreds of those. you could develop it 'cause of nutritional deficiencies like tyrosine is necessary to make thyroid hormone, copper, you know, things like that. I can't tell you offhand which which nutritional factors, but people can look that up, what nutritional factors are important.

To make thyroid hormone. and then infections like, for example, Lyme disease causes Hashimoto's thyroiditis, which is an autoimmune where your immune system's actually attacking your thyroid. COVID vaccination, like the Pfizer and the Moderna vaccine, if you are genetically vulnerable, can also cause your immune system to attack your thyroid. So there are many, many causes, plus there are inherited genetic vulnerabilities and it

It's not always low thyroid, sometimes it's high thyroid, hyperthyroidism, like Graves' disease, right? You can have antibodies

Bill Gasiamis (13:01)
Mm-hmm.

Dr Hedaya (13:02)
that are actually stimulating thyroid activity as well.

Bill Gasiamis (13:06)
Wow. The environmental toxins. we talking about all day, every day household use

kind of environmental toxins? I imagine the external of the house, they're kind of out of our control, right? We'll talk about like, you know, like pollution or things that are associated to things that are caused that we don't necessarily control, but internally inside the house or what we expose ourselves to that we can control.

what would some of those environmental toxins

Dr Hedaya (13:38)
Well

Bill Gasiamis (13:39)
be?

Dr Hedaya (13:40)
so for example, you know, in your produce, you know, there are pesticides, or in the man made materials in your car or the man made materials in your home. Let's say you bought a new home and you have, you know, some kind of synthetic floors or furniture with synthetic materials or materials that are natural that are treated with chemicals for various reasons. Those things all can be not everyone is, but many of them are called homes.

hormone interruptors because they actually can change the way your hormones function. You know? So we're the truth is we're bathed in these chemicals. They're everywhere. And very hard to escape them. The best thing you can do is kind of try to detox them using a healthy diet, a lot of crucifer vegetables and lots of vegetables, above ground vegetables that are grown in healthy soil.

Without pesticides, organic preferably, right? and then there are supplements you can take, such as metagenics makes something called UltraClear Plus, which helps support the liver, and its detox functions. You know, some people are more vulnerable than others, but you know, these thyroid nodules you like you have, they're very, very common now. Very common. And that's you know.

In large measure, I think these hormone interrupters that are interfering with how the the thyroid follicles in the thyroid gland are operating.

Bill Gasiamis (15:13)
Is it possible to have thyroid nodules and not know about it? I, I

Dr Hedaya (15:18)

Yeah.

Bill Gasiamis (15:19)
say that because I had nodules that were the size of a baseball, apparently in my throat that were growing inwards, that didn't make a lump outside of my throat, which

Dr Hedaya (15:33)
Yeah.

Bill Gasiamis (15:34)
I was not aware of. And the way they found it was they did a chest X-ray after brain surgery because I wasn't recovering well.

to check my chest to see if there's an infection. And they noticed a massive lump in my throat and my esophagus and my windpipe were pushed six centimeters.

Dr Hedaya (15:52)
Wow.

Bill Gasiamis (15:53)
I'm not sure what that is in inches. And they said to me, well, can you swallow? Can you breathe? Can you do it? And I was like, yeah, I'm all fine. There's nothing wrong with my throat. But that was the first sign that there was something wrong with my thyroid before that.

there was no sign of it. I ask that because either I'm totally oblivious or it is possible to have thyroid nodules and not know it.

Dr Hedaya (16:23)
Well, most people don't know it. Now yours is so massive, but I think it's kind of what you said is how it grew. If it grew towards your vocal cords or your laryngeal nerve or something, you would have had some pretty bad hoarseness or something like that. But it grew I guess backwards so it didn't interfere that much. And I guess your s your body adapted gradually over time. You know, yes, it's very possible for sure. Very common.

Bill Gasiamis (16:49)
And

how would somebody interact with a general practitioner, for example, now to go through the process of understanding, A, their thyroid health and whether or not they have any nodules.

Navigating Thyroid Health with Healthcare Providers

Dr Hedaya (17:02)
I mean in other words, given what we've talked about, how should they approach their doctor basically?

Bill Gasiamis (17:07)
Yeah.

Dr Hedaya (17:08)
I guess I would say go to AI, get a list of the symptoms of low thyroid or high thyroid or all of them, check them off. So then when you go to the doctor you have a list, check your temperature, check your pulse, although the doctor will should check that. And then you could say, look, I have these symptoms, or maybe you don't have any.

But if you do, you have these symptoms, and clearly thyroid hormone levels can affect the brain. And I'd like a TSH, a free T4, a free T3, and a reverse T3. That's it. And if they

Bill Gasiamis (17:45)
Okay, perfect.

Dr Hedaya (17:46)
say, no, no, we don't need to do that, you know, a lot of times what they do, they'll just do a TSH. Or they won't do the reverse T3. They don't, unfortunately, look at the thyroid gland in a dynamic way. They say,

the TSH is fine. If your thyroid was low, your TSH would go high. We don't need to do the rest. But that's not true. That's not true at all. Because especially if you had a stroke, your pituitary function may be compromised. Your TSH may be fine or low and your low thyroid. As matter of fact, in the last interview, the case that I talked about, who referred me to you, she actually had a low TSH, but she had a very low, I think it was a free T4.

Or free T3 or both, whatever it was, but she had too little thyroid hormone, and her pituitary couldn't respond because of the stroke.

Bill Gasiamis (18:37)
understood. So that's a great list of

Dr Hedaya (18:37)
So so be you have to be

dogmatic and you say to the doctor, look

Even put into even put into AI and say, look, if the doctor comes back to me and argues against these tests, what should I say? You gotta be prepared because the doctor will steamroll you. You know, that they only allow this, they only allow that, I'll only do the free T4. Well, that doesn't tell you how much has been converted to T3, free T3, and it doesn't tell you, even if the free T3 is normal, that doesn't mean you're not overproducing thyroid and and dis

you know, and neutralizing it with the reverse T three. So, you know I mean I I mean I think it's s so important that a thorough look is is really important. If you have the symptoms, you know.

Bill Gasiamis (19:22)
I agree with you. That list of to-dos, I'm gonna put that on the show notes. People can go and get that list if they don't wanna go into AI themselves or they haven't got the time or whatever. They can just download it from there. And then they'll be able to take that and begin a conversation with their general practitioner. What's interesting is that I'm in Australia, you're in the United States. My general practitioner is pushed back when a…

when a patient will turn up and say, I have these tests? They'll say, well, no, you don't have any condition that is obvious that you need these tests. So it's not covered. So you don't need to do it. So my next suggestion to them is no problem. Order the tests and I'll pay for them. Now it's not ideal, but if you're not going to do them for me and I need to know, cause it's my health, I'm going to pay for them. So just tell me how much it is and I'll find a way and I'll make it happen and I'll pay for it. So that's another option.

Dr Hedaya (20:17)

Yeah.

But if you go in with your symptom list, right, and you say, Well, that's not true, because these are the symptoms, you know, that I have, here they are, right here. You can take a look, you know. And then the last thing I'll say, this gets even more tricky, is the reference range, I'm sure in Australia, but certainly in the United States, the reference range basically is of the TSH, the pituitary home.

Is 0.5 to 4.5, meaning you anywhere in that range and your TSH is normal. That is a bad reference range. And I know it to be a fact because I I I guess I won't waste your time with it, but I did a study on a hundred people and with a very sensitive thyroid test called a TRH stimulation test. and I was able I hired a statistician to calculate this.

And say, well, I don't want to keep doing this test on everybody. What TSH predicts an abnormal TRH stimulation test? And he came back and said to me, Well, once the TSH is over 1.4, it starts to increase your odds of having an abnormal TRH stimulation. So I said, okay, so 1.4 TSH is my cutoff, right? That's in my mind. I said, okay, that's that's my cutoff, that's when I get suspicious.

Later, several years later, a paper came out, a large, large study, called the NHANES Study, Nurses Health, and I'm not sure what it stands for. Thousands of people followed over many, many years, over decades, and they found the mean TSH in the US population is 1.4. So, right where I what right where my study found. So that means statistically, it is not.

impossible to have the upper limit of the reference range being at four point five because statistically the upper limit is never more than two standard deviations.

So even if your standard deviation is 1.4, which it can't be, you you're not going to reach 4.5, right? Unless you have a it's called a bimodal distribution curve. If you have that, then you'd say, well, it it could be. But we don't have that with thyroid. So that reference range is wrong. The upper limit of the reference range should be 2.5. And about half the endocrinologists in the United States believe that. And half say, no, no, no, don't change it.

So that's another sticky point because, you know, easily people get a result and they'll go to the doc and say, no, the reference range is 4.5. You're normal. Then you could say, well, look, I have these symptoms, and they could do a literature

search. What's the normal reference point? What in in the N A N HANES N-H-A-N-E-S study? It'll show you 1.4. and you could take be prepared to go to the doctor and say, Well, here's a study that suggests that the reference range may be incorrect.

and I have symptoms by the way. We don't treat the lab, we treat the person. So could we give a trial? Just a trial, there's no harm done, you know, trial. Let's see let's start at a very low dose. Let's see how I feel. Maybe I'll get better. I'll come back in a month.

Bill Gasiamis (23:45)
Yeah, I love that. It's really good advice, especially coming from someone who is a doctor who think is thinking on the same way as me, for example, the patient. Because that's like a match made in heaven. And that's so rare to be able to get that. Often, my challenge to my general practitioner was well, the reference range isn't that average of a sick population, because it's usually a sick population that comes to see you to get bloods. It's

It's not the most healthiest people that come to see you to get bloods. And that's kind of how I try to like start the conversation of convincing a general practitioner to do a test that they're reluctant to do. And when I say they're reluctant, I'm not in there every day. I'm not in there every week. And I'm not putting stress on the system to an extent where I've been over using the system. I'm not at all.

in there once, twice a year, maybe, you so if I'm in once, twice a year, well, then, I'm not mucking around. Like I've come there to investigate something that I'm suspecting is wrong with me. It's my body. I'm feeling something. had a bit of a look online. This is what I suspect. Don't try and convince me out of my thinking or my instinct more better. Why don't we just, work together to get to the bottom of it. If it is something it is, if it's not, it's not, and that's okay. Not a big deal. I'm better to know.

then not no, I think, you know, it's better to be safe than sorry in my mind.

Dr Hedaya (25:16)
Yeah. I would

I would only think only correction I would make is the reference ranges generally are made on normal populations. Now now the thing is who's normal anymore?

Number one. Number two, that's a statistical norm that doesn't tell you anything about your genetics.

your vulnerabilities, it's not an individualized statistic. I mean it's it not an individualized thing. What's your normal range? And are you out of your normal range? Nobody can answer that, right? Unless you had previous data before you were ill. And you say, well look, I've been running at a 1.1 for five years or 10 years and now I'm at 3.2. That's a big change. Well, you know you're stressed. Well yeah maybe but here are my symptoms. Always come back to your symptoms.

Bill Gasiamis (26:11)
Got it, got it.

Dr Hedaya (26:12)
No.

Bill Gasiamis (26:13)
You use the word stress just now and my general practitioner says, I might go in and some bloods might be out of whack or some things might be not feeling great. And he'll say, are you stressed? And I'm like, well, I'm not stressed. like, I'm not stressed in any way that I can say is worse than normal. For example, I'm

Dr Hedaya (26:35)
Mm-hmm.

Bill Gasiamis (26:36)
just, you know, I'm attending to my clients at work.

picking up the kids from school, I'm, you know, making sure the bills are paid. Like I'm just doing the normal things that I always

Dr Hedaya (26:48)
Right.

Bill Gasiamis (26:48)
do, which tend to be stressful. And somehow when we talk about stress, cortisol seems to come into the conversation.

Dr Hedaya (26:57)

Mm-hmm.

The Role of Stress and Cortisol

Bill Gasiamis (26:58)
And I don't know how to respond to a general practitioner who says to me, am I stressed? Because I'm not experiencing something extreme or dramatic.

in the months before I came to see him. So can we have a conversation a little bit about stress, cortisol, what is stress, what is cortisol, are they linked? Tell me about that, give me your thoughts.

Dr Hedaya (27:21)
Okay.

Okay, so this is a multi-layer system. Okay, it starts with your perception and your of a situation and the story you tell about you the story you tell yourself about the the situation and your need for control of a situation and as opposed to saying I'm in the flow of the universe and

All right, this is you know, this is the way it is, and I'll adapt to it. Not so easy by the way, but it's a much healthier way because most things will not stress you. Now, pain, let's say you stepped on a nail, you're gonna have stress, okay? Totally stressful, etc. But there's a a difference between pain and suffering. Most of our problem is suffering. Suffering is a result of thinking patterns.

perspectives of yourself and the world and the future and blah blah blah. I could talk about that for a long time. And that is probably one of the most important places to intervene and to train yourself, etc. Now, once this thing is registered as stress, it goes through back to the hypothalamus and the pituitary where all those hormones are controlled, the hypothalamus and pituitary in the brain, now you've God forbid, you've had a stroke.

Those things may be affected, therefore, those systems may not be working well. In that case, you may not be able to handle stresses that you used to handle. You may not you may not have those shock absorbers. So, how do you measure this? I think the way you measure it again are symptoms, and typically it would be low cortisol and low DHA, d DHEA, and low pregnenolone.

And the symptoms would be a lot of fatigue, right? Maybe poor wound healing, muscle aches, body pains, getting sick more easily, cognitive slowing, depression, anxiety, extreme exhaustion, salt cravings, in unstable temperatures, you know, I would say yeah

You know, th loss of appetite in severe cases, you know, dizziness on standing. Okay. So those are the low adrenal output things. Now how d how do you measure and again, you think you have a problem, go to an AI thing, make that list, check it off, whatever applies, and you know, work yourself up symptomatically and then ask well, okay, what what are the best tests here? What are the

best test. Now the way I test it is I get morning I got a morning like eight to nine a.m fasting ACTH and cortisol. It's gotta be in the morning around between eight and nine a.m.

fasting. I also at the same time get a D, like David, H E A and a D H E A sulfate, and then I also get a pregnenolone. And if I think there's any kind of sex hormone problem that I want to check, then I will check a free testosterone, FSH, LH, and

The testosterone measures the free testosterone is very unreliable. So if it comes out low, you want to do it two more times to double check that. But the other measures are pretty reliable. And then you'll you'll know the other thing you can do is you could do something called a Dutch test, which is a urine test that'll look at your cortisol through the day, or an adrenal saliva test. It's ASI, alleval adrenal saliva index, the Dutch test.

or the ASI, both good tests. and those will tell you what's going on through the day. Like if you're not sleeping, it could be because your cortisol high at night, you know. Wake up horrible or in pain. Could be because your cortisol is really low in the morning. Really low. You can't even get out of bed, you know, can't get going, right? So these are all all things that you can do to measure and then you can replace these hormones and

That's one thing to do. The other thing to do is to work on how you manage stress. There are millions of ways of doing that, right? From meditation to heart math to

Bill Gasiamis (32:05)
Mm-hmm.

Dr Hedaya (32:06)
yoga to you know, there's just a lot a lot a lot of ways to

Bill Gasiamis (32:10)
Yeah, let's go back for a moment and talk about testosterone because when I hear testosterone, I'm hearing you say to a male that I need to have testosterone in my body and at certain levels, et cetera. And sometimes it can fall out of whack and you need to get it tested. I had mine tested recently. It's all good. But women also need testosterone. Tell me about that.

Dr Hedaya (32:35)
Yeah, so I was I was thinking of both male and female when I said it,

Bill Gasiamis (32:38)
Yeah.

Dr Hedaya (32:39)
because it's it's you know, women who are postmenopausal can have it's much more common to have a low free testosterone loss of libido, you know. testosterone the studies which I've reviewed a few times, you know, there's a debate does it affect the mind, the brain, you know. It seems to have an effect on well being, on

vitality muscles, sex drive obviously, libido erectile function, brain cognitive function, some mood effects, etc. So I I think it's important now i it it has to be managed in women as well as men. You know, in in women testosterone is a step on the way to estrogen as it is in men, right? And in the metabolism, right?

So it it should certainly be assessed in everybody.

Bill Gasiamis (33:39)
Yeah. And estrogen, mentioned estrogen. Now, one of them in my mind, it seems to be more associated again to women, estrogen, especially. And, and then men also have estrogen, need estrogen.

Dr Hedaya (33:55)
Men also have estrogen. I haven't studied it so I couldn't tell you, but I imagine it's doing something. it probably turns men into better leaders after they're fifty, is my guess. Let

Bill Gasiamis (34:08)
more emotionally intelligent.

Dr Hedaya (34:10)
more emotionally intelligent, less testosterone, you know. You know, I I I

Bill Gasiamis (34:15)
You know what? That's a good theory. We'll run with that for now.

I might relate to that, know, who knows.

Dr Hedaya (34:22)
Yeah. I I think

Bill Gasiamis (34:24)
Awesome, awesome, so…

Dr Hedaya (34:24)
Yeah, so w for

for women on estrogen, it depends, you know, who are you assessing? Are you that's a whole complex subject, you know. Is it a young woman who's menstruating? Does she have premature ovarian failure, endometriosis, ovarian cysts, insulin resistance, they all kind of travel together, methylation problems, they travel together. is it someone who's perimenopausal where she's starting to lose progesterone and getting a lot of PMS?

That's pretty easy. You can replace the progesterone. Is it postmenopausal a woman who's just kinda lost the estrogen, lost the progesterone? You know, if there's a family history of cognitive decline or dementia or something like that, there's great evidence that transdermal estrogen and some oral progesterone bio bioidentic, not synthetic, is great and reduces the risk for lots of disorders later in life for women. You know. So

there's a whole you know, there's a whole way of working all that up, depending on who who you're looking at. But very important. Now so the let me

Bill Gasiamis (35:31)
Yeah, I love it. Yeah.

Dr Hedaya (35:34)
say this. The important thing here, and this is maybe the most important thing. Someone's had a stroke, they're obviously tremendously stressed. You have to look at all the hormones. You can't the brain is a hormonal organ.

It's an immune organ. It's a neurological organ. I used to teach psycho, neuro, immuno, and the chronology at Georgetown for a number of years. Okay? And the brain and hormones, you can't separate it. So if the brain is under stress, the hormonal axes are under stress, and there's not one hormonal axis when it's abnormal that cannot cause neurological or psychiatric problems. Okay? So you must, as part of the work of anyone who's had stroke.

You must look at the endocrine, the hormonal axis. You know, you must look at it. Why? Because if you're trying to recover from a stroke and you don't have adequate hormones, it's gonna be much, much harder. Much, much harder. Right? But

Bill Gasiamis (36:37)
Peace.

Dr Hedaya (36:38)
if you have if you have the the hormones at good levels, okay, now the the brain has that. If it has its nutrients, it has that, you know, okay, now it can do something, you know.

What happens, think about it this way. What happens in adolescence? The brain is being rewired, the body's growing, brain is rew being rewired. Where are the hormones? The hormones are skyrocketing. They're necessary for the rewiring. You had a stroke, you're trying to rewire brain, you gotta have adequate hormones.

Bill Gasiamis (37:10)
I love it. This is the thing that people miss. You know, we talk about the gap in stroke recovery. Acute phase gets handled

Dr Hedaya (37:19)
That's

Bill Gasiamis (37:19)

99 % of the time really well. People get patched up and they get sent home in some kind of alive state, whether they are fully functional

Dr Hedaya (37:27)
Yeah.

Bill Gasiamis (37:28)
or working towards it or whether they are less functional and working towards being more functional, like some kind of stage

Dr Hedaya (37:35)
Mm-hmm.

Bill Gasiamis (37:36)
of you're alive and you're good enough to go home.

And then there's no information after that. So how do we assess address? How, what do we know? What do we not know that we need to know? And this is kind of what this conversation is, right? It's like, okay, here's

Dr Hedaya (37:53)
Yeah.

Bill Gasiamis (37:53)
a whole bunch of things we've just discussed. There might have been things that you heard for the first time. Don't let that, get in the way of your curiosity and investigate the thing that pricked your ears up, whether it was a symptom that Dr. Hedaya mentioned and just

do a little bit more work in understanding what that is, take that to your general practitioner and begin the conversation of taking responsibility for your recovery. And in my mind, like there's gotta be like a foundational thing that people can do to intervene that doesn't cost most of the time anything extra. And that helps encourage and nourish the brain in overcoming these challenges, but then has the

a cascade effect of having the same positive outcome on all the other organs and hormones. And that to me is nutrition. So like, if you're, if you would suggest to somebody how they might start thinking about their nutrition as opposed to what they might have been doing before stroke, how do you begin that conversation? And what are the two or three fundamental things that they need to consider?

about nutrition.

Nutrition’s Impact on Brain Recovery

Dr Hedaya (39:11)
Okay, so

If it doesn’t grow that way, don’t eat it.

I never saw a bread tree. I didn’t see an ice cream tree or a Twinkie tree. Okay. So if it doesn’t grow that way, don’t eat it. Balance your plate. Balance your plate. And actually our coach, Caroline Hade, is putting out an ebook. I don’t know, should be out at a week or two or three weeks. It’s like, I don’t know, four or five dollars or something.

and that will tell you exactly how to balance your plate. and then I would say very important to have three meals and maybe, depending on your how insulin resistant you are, maybe additionally two snacks. and per day, but keep your calories you don’t want to be overweight, okay, because if you’re overweight, you know, that’s a

That’s its own risk factor for brain problems, right? but you can’t lose weight in a day, you’re stressed, you’re hungry, you’re tired, you eat the carbs, you know, everybody struggles with that. But that that is one of the biggest enemies of eating eating eating these processed carbs that we all love is one of the biggest enemies of your health. One of the biggest enemies of your health for sure.

Bill Gasiamis (40:35)
Okay, there are some great resources that people can again look into how to eat to heal the brain. And we didn’t have to have a deep conversation about that. But I love

Dr Hedaya (40:45)
Mm-hmm.

Bill Gasiamis (40:45)
what you said about balancing the plate. And if it didn’t grow that way, don’t eat it. It’s such a simple thing. If it comes in a packet on a shelf in a supermarket with all fancy pictures

Dr Hedaya (40:59)
Yeah.

Bill Gasiamis (41:00)
and stickers and a list of ingredients, like it's probably not nutritional.

of food. It's probably something that's going to make inflammation worse. It's probably something that's going to give you the type of energy that is not helpful. It's probably going to have a whole bunch of other things. And that's kind of my approach to healing and recovering my brain. It's one of the first things I did was just look at my nutrition, immediately stop smoking and drinking. mean, I know

it should go without saying, but sometimes you have to have a stroke for it to actually sink in and make sense. and don't have any alcohol at all. I'm talking about forever if you can, but I didn't have alcohol

Dr Hedaya (41:46)
Yeah.

Bill Gasiamis (41:47)
for at least the first four or five years. And now in the next five years or so, maybe I had one glass per year, just because I was, in an event where it was, everyone was drinking and it was almost necessary to have

sip or half a sip or act as if I was drinking. So with that, I think we'll wrap up this conversation today. There's been a lot for people to digest, go back and listen to it a second time. And a third time that we have some resources in the show notes. And Dr. Hedaya, thank you for joining me again. And I look forward to our conversation that's coming up in a few weeks time where we're going to talk about toxin load and neuroplasticity.

Dr Hedaya (42:29)
Beautiful. Thanks so much for the opportunity, Bill. I hope I hope people get something out of this and they pursue what they need to pursue.

Bill Gasiamis (42:36)
Well, that's a wrap on this conversation with Dr. Robert Hedeya. If there's one thing to take from today's interview, it is this. The brain is a hormonal organ and recovery isn't just about the brain healing in isolation. Thyroid, cortisol,

testosterone, estrogen, all of it is connected, and all of it is worth checking if your recovery has plateaued in ways that don't quite make sense.

Dr. Hadea's free PNIE questionnaire is linked in the show notes. Download it, work through it, and take it with you to your next GP visit. If you want to go deeper on the thyroid piece specifically, go back and listen to the earlier episode with Dr. Elena Zinkov on stroke fatigue and thyroid.

And if you missed it, the first conversation with Dr. Hedeya on photobiomodulation is a great companion to this one. if this episode has helped you, share it with someone who needs to hear it. That's genuinely the best way to help this show reach more survivors. My book, The Unexpected Way That a Stroke Became the Best Thing That Happened, is available at recoveryafterstroke.com/book.

And if you'd like to support the show financially, you can do so at Patreon by going to patreon.com/recoveryafterstroke.

Until next time, take care of yourself and don't assume it's just a stroke.