How to prevent and reverse dementia: a functional medicine psychiatrist's approach to successfully tackling cognitive decline

With Dr. Kat Toups

The MindHealth360 Show

Episode Transcript
Host: Kirkland Newman
Guest: Dr. Kat Toups

Kirkland Newman:

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Dr. Kat Toups:

I talk about the three R's, the way to remember what you need to do for dementia, right? You need to remove the things that are hurting your brain. You need to replace the nutrients and hormones and things that you need. Then you need to regenerate your brain, because our brains can regenerate. When I went to medical school, we were taught that, okay, you have all your neurons by 18, and that was it. After that, it was going to be downhill. You're going to just be losing them. And that's not correct.

Kirkland Newman:

Welcome to the MindHealth360 Show. I'm Kirkland Newman, and if you, your loved ones or clients suffer from mental health issues, such as depression, anxiety, insomnia, poor memory, poor attention, mood swings, exhaustion, et cetera, I interview the leading integrative mental health practitioners from around the world to help you understand the root causes of these symptoms, many of which may surprise you, and suggest solutions to help you heal. If you like this interview, please do subscribe, and forward to others who might find it helpful. If you want further information, please go to www.mindhealth360.com, or find us on social media.

Kirkland Newman:

Dr. Kat Toups, welcome to the MindHealth360 Show. You're a Distinguished Fellow of the American Psychiatric Association, which is the highest honour bestowed by the APA. You're also board certified by the American board of Psychiatry and Neurology, and you're previously boarded in geriatric psychiatry. You're also a certified practitioner with the Institute of Functional Medicine, so that's a very rare combination. Formerly, you were an assistant professor of psychiatry at UC Davis, where you were the inpatient residency training director, and later the founder and medical director of the Bay Area Research Institute, which is a clinical trials research center in Lafayette, California, for 12 years.

Kirkland Newman:

After serving as the principal investigator on over 100 clinical trials, including 20 failed trials for Alzheimer's medications, you realised that the elusive cure for brain and psychiatric illness was not going to be found in a pill. Now I'm going to put all your biog, which is very, very comprehensive, in the show notes. But I just wanted to start with that because I think it's very significant that you are a very distinguished board certified psychiatrist, who has been very closely linked to pharmaceutical trials for Alzheimer's medication. Yet you have now moved to functional medicine, and your practice, which is in California, in the Bay Area, now devoted exclusively to functional medicine psychiatry, and functional approaches for treating cognitive impairment and dementia.

Kirkland Newman:

You've also been a contributing author to the academic textbook *Integrative Therapies for Depression: Redefining Models for Assessment, Treatment and Prevention*, and a number of other appearances and books. You're in the book Life *201: A One-Stop Shop for your Health, Wealth, and Happiness.* You've also

recently completed a collaboration with Dr. Dale Bredesen on a prospective clinical trial using a functional medicine method to reverse mild cognitive impairment and early dementia. And the study publication's expected in 2021, so we're all looking forward to that.

Dr. Kat Toups:

We're working on it now.

Kirkland Newman:

Most importantly, you're the author of an upcoming book called *Dementia Demystified: The Definitive Guide to Resurrecting Your Brain, Reversing Cognitive Decline, and Regaining Your Memory.* Now, Kat, I'm so grateful to have you on the MindHealth360 Show. You are one of my heroes, and I would say, in some ways, I've always considered you the godmother of functional medicine psychiatry. You've been practicing it for a long, long time. You're incredibly dedicated to it. You're incredibly good at it.

Kirkland Newman:

You have irrefutable credentials, and most importantly, you get your patients well, and I think that is super important. But what obviously we'd like to discuss this evening is dementia, reversing dementia, preventing dementia. We know that dementia is an epidemic problem of epidemic proportions, is growing at a very rapid rate, and there is currently no accepted or pharmaceutical treatment that really works for it. What I'd love to do is to start with you telling us your story. How did you get, first of all, into dementia? How did this become your special area of expertise and interest? Second of all, what was your journey, from conventional psychiatry, to functional medicine psychiatry? I know the two are linked, but I'd love to hear that.

Dr. Kat Toups:

Great. Well, thanks so much for having me. I'm so excited we're finally able to connect for this interview as you know. I know we've been hoping to do it for quite awhile and I have so much to share. Forgive me, I'm going to talk fast, because I could talk for hours about reversing cognitive decline and dementia. It's such a multifactorial idea or system of what we do. As you mentioned, I was a geriatric psychiatrist, and ever since residency training, I worked with geriatrics and got boarded in that area. And I always loved, I loved older people, right? They add so much dimension to our lives. Of course, now I'm becoming one of those older people. As you mentioned, when I ran the clinical trials research center, I worked in all areas of psychopharmacology, but I did about 20 long term Alzheimer trials.

Dr. Kat Toups:

What happened was, when I was about 50 years old, and that was 11 years ago, I was testing my patients in my dementia trials, and doing the mini-mental status exam, where we ask the memory questions and cognitive questions. And I started to realise that I was becoming as impaired as my patients. So I would give them the three words to remember on the mini-mental status exam. And then I would ask a few more questions, and then I would ask the words again. And I had two sets of words that I used, and I'd used those words for more than 20 years. And I could not remember the words. I would have to write down the answer, so that when I quizzed my patient, I got the right answers for them. So I'd developed, really, what we now call multiple chemical sensitivity. I'd become allergic to everything. I was covered with rashes, covered with hives. I was all inflamed.

Dr. Kat Toups:

What was happening was that inflammation that was rampant in my body was eating out my brain. So my brain stopped functioning, and it was in retrospect that I dissected that I had descended into a clinical picture of dementia. I couldn't remember anything. I could no longer use the computer easily. I would have to ask my husband over and over to come and show me how to do things on a computer that I knew how to do. I couldn't drive a car very easily. I lost the ability completely to be able to parallel park, or back up my car. Just all that conflict sequencing, my brain couldn't do it anymore. It was a visual spatial problem. I just couldn't handle those visual spatial inputs.

Dr. Kat Toups:

I couldn't dial a phone number easily, I would get confused. Previously, I could hold those seven numbers in my head, and dial the phone number. Sometimes it would take me two or three times to dial a phone number. I started having trouble with my hearing, and I thought it was my hearing. I kept going in, and getting tested, and asking the EMT to give me some hearing aids. One day he looked at me funny, and he said, "You know, it's not in your ear, it's in your brain." And I had actually developed auditory processing problems. I was hearing snatches of words, and my brain was not decoding the words that were being said. So it was just this picture that was coming over time, that I was descending into this picture of dementia.

Dr. Kat Toups:

Who thinks of dementia when you're 50 years old? People don't. But what we're seeing these days is, actually for most of my career, we would see a few people with dementia in their fifties, but now, we're seeing lots and lots of it. And when we see dementia in the earlier ages, it seems to progress much more rapidly than when we see the late onset dementia.

Dr. Kat Toups:

That was what brought me to the functional medicine table. I mean, I closed down, I transferred all my research trials to another research center, because I knew I couldn't work anymore. I thought it was going to take a month off, and that I would somehow get better in a month. And it was really a three-year journey of getting well, and being able to get my brain back online and go to work. First, I went to a food as medicine conference, and that really opened my eyes. I thought I ate healthy. It was just really eye-opening to learn more nutrition, something, of course, that we never learn more than one hour in medical school.

Dr. Kat Toups:

From there, I learned about the Institute for Functional Medicine. I sat in the back of the food as medicine and Google Institute for Functional Medicine, and their next conference was Autoimmune and Allergy, which I clearly needed. I was allergic to everything. I mean, if I could leave my house, because the fatigue became so bad, I couldn't leave my house hardly for a year. But if I did leave my house and walk into a store, the smells would give me more rashes and more hives, and more brain fog and more fatigue. I started my studies with the Institute for Functional Medicine to learn how to help myself, really. Of course, once I got in deeper and deeper and deeper, I realised, "Wow, this is the missing piece that, at least in psychiatry, that we've needed."

Dr. Kat Toups:

When I trained in psychiatry, we were taught, okay, we dealt with the brain. The brain was disconnected from the body. It's compartmentalised. What I learned was, no, what happens in the body is what happens in the brain. Everything is connected. In unraveling things, what I realised is, if we want to fix our broken brains, we have to fix our broken bodies. Mark Hyman wrote a wonderful book, The UltraMind Solution. That was, I think, the subtitle, If You Want to Fix Your Broken Brain, Fix Your Broken Body, or something like that. That's exactly the situation.

Kirkland Newman:

That's so interesting. Basically you, at the age of 50, had a number of different problems, including autoimmunity, which was causing inflammation. Then that led to cognitive impairment. When you unraveled, using the functional medicine approach, what had been causing your dementia, your cognitive decline, was it due to the inflammation, and your overactive immune system, due to your autoimmune condition. What did you piece together? Because one of the things that I love about functional medicine is that you really look at the root cause of what's causing your mental health issues.

Dr. Kat Toups:

It's almost never just one thing. So it's not a root cause. It's, a root causes plural, right? If we want to fix things, we have to uncover all of the multiple things that are affecting our body, because our bodies, I mean, we survived without modern medicine for most of mankind, right? I mean, most of the time, and our bodies are designed to heal. I mean, it's amazing, biochemistry and physiology, our bodies are amazing, but we have to get out of their way, to let them heal. Of course, we have to give them what they need. It wasn't just autoimmunity. Of course, autoimmunity, what's causing autoimmunity, what are the triggers? It was so many things for me, and I learned everything on myself. I was going through the menopause transition, so I didn't have enough hormonal support for my brain, and we could talk more about that. But the brain has receptors for estrogen, progesterone, testosterone, pregnenolone, DHEA. Those hormones are trophic for our brain, meaning, they give life. It turns out, I mean, not recently, I think in the last couple of years, the brain actually can make its own estrogen, and its own progesterone. So it's not just our sexual organs that are making our hormones, but the brain is making hormones, as well. So those hormones are super important to the brain. That was one factor for me, right?

Dr. Kat Toups:

There's always nutritional deficiencies that are a factor, and it turned out I was really deficient in B12. Well, we've known for decades that a B12 deficiency can cause dementia. And then, you go further. Well, why are you deficient in B12? Well, what's wrong with your gut? Why are you not absorbing your nutrients? Are you not giving the right nutrients? Is your gut not working well?

Dr. Kat Toups:

For functional medicine, that's where we start with everything, is with the gut. The gut is the root of your immune system. As I said, you have to be able to even absorb your nutrients to fuel your body. So there's a saying, also, that leaky gut equals leaky brain. When your gut is inflamed, and it can be just from stress, or they've studied college students, and the notion of leaky gut, and leaky gut just means increased intestinal permeability. So the lining of the gut turns out to be only one cell layer wall thick. So anything that damages, it makes these little microscopic holes in the lining. If we have a leaky gut with microscopic holes, whatever we eat, little particles can go through those holes, and get absorbed into

our bloodstream. It can be food particles. It can be all the bacteria that comes in with our food, because we're certainly taking in bacteria when we eat our food.

Dr. Kat Toups:

When it gets into the bloodstream, they're invaders. Our blood is supposed to be sterile. So anything that then gets absorbed into the bloodstream, that's a foreign entity, it's going to activate an immune response, because our immune system wants to kill those invaders. The way it kills any invaders is, it's making inflammatory cytokines, or chemicals, to get rid of these things, and to eat them up, and break them down. In the short term, that's fine, if that's happening short term, but if it's chronic, then your immune system is turned on chronically, and it's creating that inflammation chronically. The blood in the body, of course, connects with the blood in the brain, and so, these things get into the brain, and we say, "Leaky gut equals leaky brain."

Dr. Kat Toups:

If you're having a leaky gut, and you can just be assured that it's traversing into your brain, and causing inflammation into your brain. I think I'm digressing from the question, but what was wrong with me personally? Multiple things. It turned out to have high levels of lead and chemicals, and the hormonal stuff, the autoimmune stuff, stress. We know that stress is a destroyer of our hippocampus, our memory centers. It was multiple things that just created a perfect storm. When you got enough of it going on, then you become symptomatic.

Kirkland Newman:

I think that's part of the challenge with treating these sorts of brain diseases and mental health issues is that it really is multifactorial. Therefore, a pill won't work, and you have to take a very multi-pronged approach, and look at all these different factors. So when you say root causes, plural, absolutely. If you're looking at Alzheimer's and dementia, I think, if you could just name, I don't know, the top five factors? I mean, you've named a few already, but I mean, the top five or six factors that you think are crucial, when you're looking at your patients, what are the key things that you look at, or you look for, to try and figure out what might be contributing to the dementia, essentially?

Dr. Kat Toups:

Yeah. So let me just say a little bit in general about the approach, then, that we're using functional medicine for addressing and assessing dementia. Lot of people are writing fantastic stuff now, about nutritional approaches with dementia, and the importance of diet and exercise and sleep. So, nutrition and exercising and sleep, and those are primary.

Dr. Kat Toups:

That's where you start, just for general health, and for any kind of chronic disease. You can't get well, if you're feeding your body junk. If your blood is high, and you know your lipids are too high, and that's a recipe for disaster. So there's lots of great stuff out there about those factors.

Dr. Kat Toups:

What I think people are missing is, the infections, the toxins and the lack of hormones. So definitely, starting with the gut, the diet, we can say more about some of those approaches, but some of the other triggers, beyond correcting all of those factors, are the infections, toxins and lack of hormones.

Kirkland Newman:

I find that great, because it's true that there's so much now in terms of wellness, and you have to eat well and sleep well and exercise, and those basics are covered. And when we talk about nutritional psychiatry, we do talk about nutrition and the gut. But I always feel that they're missing a trick, because there is, as you say, the infections piece, which very few people actually think about, and then, the toxins, which may be a little more common and the hormones, which may be a little more common, but again, are in addition to all the nutritional and lifestyle things. So talk us through those three pieces.

Dr. Kat Toups:

Well, let me just say, with the infections, people are finally grasping the import of the infections to the brain with COVID. We're seeing this over and over, with COVID, mental status changes, we're seeing young people, even recovering from COVID, with a long hauler syndrome or having cognitive brain fog. Their brains are turned to mush, they can't think.

Dr. Kat Toups:

What I'm seeing is, even some of the academic people who work in the dementia space, still looking for drugs to wipe out the amyloid are now shifting and saying, "Oh my God, here's this virus that's affecting our brains." So we've known for decades that herpes is a factor with dementia. And when they do autopsies of people that have died with dementia, they find that 98-99% of them had high levels of Herpes Simplex-1 antibodies in their brain.

Dr. Kat Toups:

Now, Herpes Simplex-1 is the cold sores, and most of us get those in childhood. It's a very common virus. But it's a much higher incidence in people that have died with Alzheimer's than in the general population. So that's one factor. Now, did herpes cause the Alzheimer's? No, multiple things came together to cause the dementia. But these viruses, what happens is, when we get viruses, many times the viruses persist in our bodies. So our immune system takes care of it, puts it under wraps, puts it under check, and keeps it in check. But when we age, people tend to have their immune systems not work as effectively. During times of stress, our immune system doesn't work as effectively.

Dr. Kat Toups:

So anything that's affecting your immune system can allow these viruses to wake up, or reactivate, and express themselves again. When we're having viruses, and especially the viruses that like to live in our brain, and there are a lot of viruses and bacterial infections that like to live in the brain. I once made a two-page list. I was researching every single thing that I could find that affected the brain, and it's a lot of infections. So it's a happy little spongy organ that these infections like to go for. When the infections get reactivated, what happens? The immune system wakes up, it's designed to kill these invaders, and so, it's creating that inflammation.

Dr. Kat Toups:

Now in dementia, we know that amyloid is a factor with dementia. Amyloid is a sticky, gooey substance that gets secreted in the brains of people with Alzheimer's, and eventually, it clogs up the works and kills the neurons, and the brain starts degenerating. So all the drug trials, many of the drug trials that I did, were designed to try to wipe out the amyloid.

Dr. Kat Toups:

We actually have drugs that can wipe out the amyloid. But what happened with those studies is, it didn't translate to clinical improvement. It could show on the PET scans that the amyloid was gone, but people didn't get better. It's saying, "Okay, that's too late. The damage is already done." Like what we've learned from COVID. By the time it's really taken hold, it's much harder to turn things back, and bring them people back. So, with the amyloid, anything that's triggering in your brain, that's causing damage in your brain, the amyloid gets secreted to try to wall off the damage, and protect those neurons. Again, in the short term, that can be a helpful Band-Aid, but in the long term, it's causing destruction. So, back to those viruses, herpes simplex, one common virus, and it's a factor.

Dr. Kat Toups:

An interesting study came out in the last two years, was it out of Singapore? Somewhere in that area of the world. And they studied 20-30,000 people. They found that if people had taken a single course of an antiviral medication for herpes, that their incidence of dementia down the road was dramatically lowered. Right now, does it mean that just taking a course of Acyclovir or Valacyclovir is going to stop you from getting dementia. No, it doesn't really tell us that, it wasn't designed for that. But it's an interesting finding that if people are having high levels of these viral titers in their blood, can we do something to try to treat that, if we're thinking that there's some active disease?

Dr. Kat Toups:

There's actually a study going on, at least it was before COVID, at Columbia, they were there studying, treating long term with Valacyclovir, which is an antiviral, approved for herpes. I believe it was an 18-month trial, looking at can that help people with dementia? Now, I don't think it's going to be enough. To just look at one factor is not going to be enough, but definitely, there's a signal that these viral infections are a factor in our brains.

Kirkland Newman:

So the mechanism is basically that the viruses and the bacteria will attack the brain cells? Then the amyloid plaque comes in, like a Band-Aid, almost, to try and heal the damaged tissue. Is that how it works?

Dr. Kat Toups:

Yeah. It's like when you bleed. You get cut, and you make a scab. That's protected, and then eventually, that gets dissolved. Then your skin heals again.

Kirkland Newman:

I mean, there are types of dementia that don't involve amyloid plaque, if I'm correct. You can still have dementia without having amyloid plaque?

Dr. Kat Toups:

People are just now beginning to recognise a much broader array of types of dementia, so to speak. I mean, when I trained way back when, and we had vascular dementia, and Alzheimer's dementia, and Lewy body dementia, and there weren't so many. Of course, there's some other diseases that can ultimately lead to dementia, advanced Parkinson's, things like that. But the shift now is to think that we

don't need to necessarily fit in all those boxes to have dementia. Dementia means that your brain is degenerating. You have neurodegeneration.

Dr. Kat Toups:

To say, "Okay, how do all of these things cause amyloid," I don't really know the answer to that, but the thinking is that amyloid is a pretty ubiquitous process of protecting the brain from damage. If you get a lot of heavy metals in your brain, then those are toxic, many metals are neurotoxic, mercury, lead, for sure. Then your brain is going to have a response to that, if you have high levels of metals.

Kirkland Newman:

Is the response an inflammatory one? So what causes the actual damage to the brain? Is it the inflammatory process, or is it the virus, or the heavy metal itself? Or is it the inflammation that comes around that?

Dr. Kat Toups:

Well, I think it's all of the above. I mean, viruses and bacteria and spirochetes are definitely feeding off of us, so there can be direct damage from that. Then the immune response can cause damage, and if there's amyloid production, that can cause damage. So it's kind of all of the above.

Dr. Kat Toups:

Then the trick becomes, okay, let's identify all these factors. What's affecting your brain versus my brain are going to be, maybe two different things. Epstein-Barr Virus is another virus that is known to live in the brain, and is a very common virus, that's mononucleosis. Many people got that in teenage years, and that one affects the brain.

Dr. Kat Toups:

Lyme disease has turned out to be huge for the brain, not only Lyme, which is borrelia, but some of these other tick-borne diseases, the BCO bartonella, just major, major psychiatric manifestations that we can see. I mean, it's been very interesting. We just did a clinical trial over the last year and a half with Dale Bredesen and two other colleagues, Anne Hathaway and Darryl Gordon. We did a nine-month clinical trial taking people with mild cognitive impairment and early dementia, and applying a functional medicine approach, and measuring all kinds of various parameters.

Dr. Kat Toups:

We're working on the data analysis now, it completed in December. And we're super excited to be able to share our data soon with people on that, because it was amazing. In my clinical trial, I think I had four people that turned up with testing to have active Lyme disease. I had 10 patients at my site, so it was 25 patients that we ended up with in the study, and I had 10. And it's a huge, huge number of people in the general population.

Dr. Kat Toups:

Now, I would say I live in the San Francisco Bay area. Particularly in the coastal regions here, we are considered a fairly Lyme endemic area, not as bad as the Northeast in the United States, but we have a lot of Lyme around here. So that was a huge factor. Lyme is just like syphilis. Lyme is a spirochete, and syphilis is a spirochete. So they're the same class of organisms. I think many people are aware that

syphilis in the old days, in the 1800s, when they became aware of it, men would have an STD, and then that would go away and he would be better. Then 10 or 15, 20 years down the road, they would go crazy, they would get demented and psychotic. It was a long term process of that spirochete, wreaking havoc on the brain. Lyme actually seems to do it much more quickly, for some people.

Kirkland Newman:

So you have these infections that wreak havoc. You also mentioned heavy metals, and heavy metals are ubiquitous. And how does that work? So you basically have a heavy toxic load? And then, how does that create neurodegeneration?

Dr. Kat Toups:

I can't speak to the exact mechanism of what the metals are doing at the neuronal level. I just know they're classified as neurotoxins, and can cause neurodegeneration. But again, they're a foreign body. The metals can be in our tissue, in our blood, and then they can circulate into the brain. People have long been concerned about aluminium in the brain, and nobody's definitively said aluminium causes dementia.

PART 1 OF 4 ENDS [00:30:04]

Dr. Kat Toups:

But all these things are just these niggly factors that add up. They're adding on to each other. So, one of my friends and colleagues did a poster session at the IFM two years ago, where she presented her first 50 patients that had presented with cognitive decline. And she just was looking at the factors. And one of the things that she found was, in her cohort of patients, their mercury levels were twice as high as age match controls. And so they weren't super toxic mercury levels, most of them, but that they were at least twice as high as expected for their age. So, how much is too much? They give you a cutoff. If your mercury is less than four, Quest and Lab Corp will say it's fine. Well, in my world, if it's more than two, we're getting worried, right?

Dr. Kat Toups:

You don't want to wait until you've chipped over the scale, and you're clearly toxic in something. You want to keep that down. So, having those particles is going to engender a reaction in the immune system. Ari Vojdani, from Cyrex labs, is an immunologist. And he wrote a paper, I believe it was a year and a half ago. And he got interested in, what kind of things have an antibody response in the brain that cross-react with amyloid? And in this paper, he tested all kinds of things. And he had certain metals, certain foods. He was able to show that a lot of things had cross reactions in the brain with amyloid causing antibody production. So, anything foreign that's getting in our brain is going to trigger an immune response. And that can, in the long-term, cause destruction.

Kirkland Newman:

And it's interesting because I presume that if your blood brain barrier is intact, then you shouldn't be getting all these foreign things into your brain. So, is that the case? I mean, do these heavy metals... Would they naturally go through the blood-brain barrier, even if you didn't have a leaky blood-brain

barrier? Or is it because your blood-brain barrier is leaky that it allows all these infections and heavy metals to get into your brain tissues?

Dr. Kat Toups:

No. It's going to get in. I mean, it's going to be more porous if you're having leaky brain. And if the blood brain barrier is more disrupted, you're going to have more things traversing. But you're still having connection with your cerebral spinal fluid, with your blood. It's all still circulating. It's not that the blood-brain barrier is this barrier that no blood from the body is getting into the brain. It's all still in communication.

Kirkland Newman:

Yeah, understood.

Dr. Kat Toups:

It just will make things worse if there's more problems. Now, with the infections, I think we should mention a little bit about infections in the mouth, and the nose. And we're again learning this with COVID. This was the first way we knew that COVID was getting into the brain, people were losing their sense of smell. And it seems interesting that actually that particular symptom of the anosmia, or not being able to smell, is coming more in the younger people than the older people. I wonder if the older people already aren't smelling as well, and they're not necessarily reporting that. So, what's happening is that virus is getting into the nose, and through those olfactory tracts, and getting into the brain. So, things that are nose that are happening go right into the brain. Things in our mouth also go right up through the cribriform plate into the brain. And so, one of the low-hanging fruit, the things we can do easily to help protect our brains and prevent long-term decline, is your oral health.

Dr. Kat Toups:

And they've found that some of the particular bacteria in the mouth of P gingivalis actually can cause plaques in the brain. They can find that that same bacteria in the brain. So basically, gum disease equals brain disease. So, paying attention to your dental health, your oral health, is really, really important. Because if you're having inflamed gums, bleeding gums, well there's bacteria in there, right? And so, taking care of that is a really important thing.

Kirkland Newman:

And then, people who have sinusitis, and who are constantly stuffy... My mother, who definitely has dementia, is constantly complaining of her sinuses and her nose and being congested. And you just think, "Okay, could that be contributing to what's going on with her cognition?" And would you say then it's good to clean your nose every day? And obviously, oral hygiene is important, but what about these nose things like Xlear, which are xylitol that you squirt up your nose to clean things? Is that helpful?

Dr. Kat Toups:

Let me say a few things about that. Xylitol... I mean, the Xlear. Xlear is a nasal spray that has xylitol and grapefruit seed extract. And it's antimicrobial. And it's actually been shown in several studies to have efficacy against COVID. So, one of the things that I'm advising my patients, and we have it all here in our family, is buy this little $10 bottle of Xlear at the drug store or on Amazon and use it like you use the

hand sanitizer, right? Maybe squirt some in your nose before you have to go into a place, before you put on your mask. And maybe when you come out, squirt some more. And that will help.

Dr. Kat Toups:

So, the notion of allergies and when does it cross over into infection, right? Because a lot of people that have bad allergies easily can get sinus infections. And then, how much is tracking in there? And it segues also for me into the notion of mould and mycotoxins, which we should mention. Because mould, and the mycotoxins from mould can trigger also an amazing immune response and can be very toxic for the brain. And that's an inhaled route, right? You're inhaling those mycotoxins. So, one of the things that we do is we actually will do a swab, and test people's nose, and see what's coming. Do they have fungal growth in their nose? Do they have any aberrant bacterial overgrowth in their nose? And then, work on trying to treat that, to protect the brain.

Dr. Kat Toups:

So, do I think everybody needs to be cleaning out their nose with a neti pot or a Neo med squirt bottle? No. I don't think everybody does. But if you tend to have sinus allergies, that can be game-changing for people. My husband suffers quite a bit from allergies. And in the old days, he was on four medications. I think he had two inhalers and two other kinds of medicines he was taking. And then, he started using the neti pot every morning in the shower. And he got off of all of those things. Now, he still suffers seasonally with the allergies. They're not completely gone. But he got off of four medications by doing the neti pot.

Dr. Kat Toups:

Our bodies were designed to clean themselves and take care of themselves in the old days. But now, our world is toxic. Right? Our air pollution is sadly ubiquitous. Now, we're having forest fires, and the stuff certainly here in Northern California and other parts of the world where all kinds of things burn. And then, we're bombarded with those toxins. So, I think if you're having problems, particularly with your nose, then doing some of those cleansing things can be really game-changing. You put a little salt in your neti pot solution, and that's a kind of hyper asthmatic. And it's pulling out stuff that's there in your nose. So, that can make a difference for the sinuses.

Kirkland Newman:

Which is great. And then, also you mentioned mould and mycotoxins. And I think that's a big issue. I know, in America, there's a lot of mould issues because of all the air conditioning. And here in Europe, and especially in the UK, it's very damp. And there are a lot of old homes that are very mouldy. And what is the mechanism of these mycotoxins attacking the brain and causing your degeneration? Is it again an inflammatory or immune response? Is that how it works?

Dr. Kat Toups:

Yeah, that is how it works in. And mould is also ubiquitous. It's everywhere. And many kinds of species of mould are not toxic for our health. But there are some kinds that are very toxic. And there are some kinds that are intermediate. So, it seems like some people are more sensitive than others. And so, once you become sensitised, what I've seen is you're stuck. You'll get more easily triggered by mould. It's a hard thing for people to wrap their heads around. Right?

Dr. Kat Toups:

Okay. Mould. Big deal. You clean it up. It's gone. But the mould gives off these little mycotoxins that you can't really see. And they say that if you have, in your cabinets or from your basement or anything, if you have a crack that's the size of a thread of hair, that's enough for mycotoxins to get out and come into the air. And sometimes, I'll see multiple family members that are dementing. And definitely you want to be suspicious. Is there something environmental in the home when that happens? But sometimes, I'll see one person in the family's fine and the other person's really affected. So, that doesn't always tell you the story.

Kirkland Newman:

Well, I think that also brings us to genetics, because I know that some people have a much harder time genetically detoxifying moulds than others. And so, I read somewhere, I think Neil Nathan was saying that 75% of the population has no problem detoxifying mould, but then 15% or 25% has a real problem detoxifying these moulds. And that makes a big difference. And I think talking about genetics... Also, before we come back to your third thing, which was hormones, I just wanted to touch on that because we know that people talk a lot about the APOE4 gene, which predisposes to Alzheimer's. What is your view in terms of the prevalence of the variants of that gene? And how important is that in terms of the picture? And what can you do about it if you know that you have that genetic variant?

Dr. Kat Toups:

Yeah. Let me say something about that for sure. First off, genes don't equal destiny. So, you can have two copies of the APOE4 allele, and that's the one that has the highest prevalence of risk of Alzheimer's, but not get sick. So, genes don't equal destiny. We have epigenetics, and things turn on and off those genes, and that's her diet and lifestyle factors, and exposures, and infections, and all of those kinds of things. So, that gives us control. And the danger is to say, "Oh. Well, I have this gene and now it's inevitable. And I have Alzheimer's in my family and I'm going to get it." Well, if that's what you believe, I do believe that our beliefs in our intentions can colour what happens in our reality. So instead, is to shift that thinking. Because really, many of the people that have been more sensitive to toxic toxins that are causing your degeneration, so the infections or metals or hormones, don't have the APOE4 gene.

Dr. Kat Toups:

So, we know that APOE3 gene, people tend not to detoxify as well with that. So, you're going to maybe be more at risk to have effects of toxins degenerating your brain than the process of Alzheimer's, per se. So, in Alzheimer's, the clinical picture of Alzheimer's, the hippocampus, which is our memory center, is degenerating. And that usually goes first. And then, things in the frontal lobe go. And then, eventually, it becomes more systemic in your brain. When you have an APOE4 gene, there's two things that I think are useful to know about that. One is that when you have an E4 gene, you're going to make more amyloid than people that have a 2 or 3. So, there's three main subtypes; APOE2, 3, and 4. And I don't really know what happened to 1, but mostly 2, 3, and 4 are the ones that everybody has that are studied.

Dr. Kat Toups:

So, when you have a E4 gene, you're going to have a more exuberant amyloid response. So, any of us that have damage in our brain, our brain is designed to secrete that amyloid to protect the damage and wall it off. But if you have a 4 (and I don't. I'm an APOE3) and we have the same insult, you're going to

make more amyloid than I do. So, that means, okay, you got to try even harder to just protect yourself from all of these things.

Dr. Kat Toups:

The other thing though, that is important to know in the E4s is... It's called a fat bucket gene. And it happened early in evolution when humans separated from primates. And that's when the APOE4 came. And it's a pro-inflammatory gene. And it's a fat bucket gene. So, why it was conserved and selected for natural selection was that, when we came down out of the trees, we were prone to attacks by predators. We could get cut on a stick, and need to heal, and not get an infection. And so, something with the E4, it causes more inflammation and more amyloid. But it also, in early humans... People talk about the ketogenic diets and the primal diets, and we probably should say a word or two about that.... But in early humans, they would kill a prey. They might have food for a couple of days. And maybe they didn't kill something for a few more days.

Dr. Kat Toups:

So, when we talk about ketosis, a ketogenic diet means you're not eating carbs. Carbs equals sugar. They're the same thing. Carbs turn right into sugar. So, our bodies and our brains can burn either sugar or fat as fuel. And when we deprive our bodies of carbs and sugar, then our body will start burning fat. And so, that's considered a ketogenic state. We know from the early 20s that when they started treating children with intractable seizures with a ketogenic diet. The kids weren't responding to medicine. And they found, if they put them into ketosis, that a large number of them would... their brain would calm down. The excess electrical activity would just calm down. And they could quit having seizures. So, trying a ketogenic diet is something that we do with some of our patients with cognitive issues, because some people find they have great clarity of their thinking when they're in ketosis. So, it might give them more energy physically. And it doesn't happen for everybody, but some people will just feel like their brains work much better in ketosis.

Dr. Kat Toups:

So, early man was naturally in and out of ketosis, whether they had food or not. Right? And so, if you're in a keto adapted state, you need to have a lot of fat. Because if you're not eating carbs, you have to have fat to break down for fuel. And so, you need to store your calories as fat. And so, that's what happens with the APOE4. There's more tendency to store your calories as fat. And so, what's the sequelae of that? It's high lipids. And so, the early humans didn't live that long, so it wasn't such a problem of people having heart disease and stroke and dementia. But over time, if you're having too much lipids, or too much fat in your blood, it starts destroying the blood vessels and clogging up things.

Dr. Kat Toups:

Hence, the whole world loves statins in treating people to lower their lipids. So, people with the E4 tend to have more problems with the lipids. And that all factors in. It's useful to know as you're playing with different types of diets. So, if you're going to do a ketogenic diet trial, what I do is I always look at people's advanced lipids, because high lipids are a cause of dementia, right? If it's killing your blood vessels and your blood flow and destroying things, it's going to kill not only your heart, but your brain.

Dr. Kat Toups:

Some people say, "Okay. Well, if you're an APOE4, you shouldn't do a ketogenic diet because it's going to raise your lipids too much." You know what? Our body doesn't read these rules. There is no one size fits all. And I have some people in my trial, we actually required that people get into ketosis and stay in ketosis throughout the trial. And, of course, we monitored their lipids and all these factors. And some of my patients that were E4s actually improved their lipids on this diet. And at least one of my patients, maybe two, that were a 3-3, that didn't have the APOE4, actually increased their lipids. And I had to say, "Cut back on your saturated fat, right? Cut down on the coconut. Shift to olive oil." Things like that. So, that's the story on APOE4. It can guide your knowledge of, "Okay, I better watch my lipids more and clean up all of the insults that are going to lead to more amyloid."

Kirkland Newman:

And that's fascinating. I mean, the ketogenic diet and fasting, intermittent fasting, paleo, all that, we can discuss a bit later, but it is very interesting. And it can be quite controversial because I think ketosis or ketogenic diets have been shown to be very, very brain healthy. But then, if for instance you have a very overloaded liver, you have liver issues, I've heard that it can be detrimental. And so, it's quite difficult to choose whether you're going to go that route or not, or whether maybe a paleo diet, which is low carb but high protein and high fat to an extent is healthier. Because ketogenic diets can be quite radical, I think. Would you say that going paleo would be safer for more people?

Dr. Kat Toups:

I think there's no one size fits all. And I think a paleo type diet is great for everybody, right? I mean, at a minimum, I have all my patients cut out gluten. Gluten is, and all the grains have very high sugar content. Easily, that's a big factor. And we know that diabetes is a risk factor for dementia because it's destroying everything, your blood vessels, your blood supply, your organs. And so, keeping your blood sugar down is a very, very important factor for your risk of all kinds of chronic diseases with aging. And so, high carbs is going to lead to high sugar for a lot of people. Maybe some people can get away with it because their genetics can break that down. But for a majority of people, too much sugar is detrimental.

Kirkland Newman:

Dementia has been referred to, I think, if I'm not mistaken, is type three diabetes. Is that correct?

Dr. Kat Toups:

Type Three diabetes. Yeah. So, we have type one and type two diabetes and type three. And I think if you have diabetes, you probably have other things wrong as well that are contributing to your brain decline. Right? But certainly, managing your blood sugar is... These are the basics, right? Manage your blood sugar. Manage your lipids. Exercise. Diet. Make sure you get enough sleep. I can say things about all of those things, but back to the ketogenic diet. I mean, it doesn't agree with everybody. And if a diet makes you feel bad, it's not right for you. It doesn't matter if it's right for 80% of the people. If it's not right for you, then don't do it. And so, what I told you told my patients at the end of our study, at the end of our nine month study, we would discuss these factors. "How do you feel on it? Does it make a difference for you?" And two of my patients, they pretty much wanted to continue mostly with ketogenesis because it really made a huge difference for them. And after the study, they all went out of ketosis. They'd been compliant for nine months. And they all went and had the things that they wanted, sweet potatoes. And there's a lot of healthy foods that you could miss out on by a ketogenic diet. So, we don't really know the

long-term quality of a ketogenic diet, to the level that we're doing it now. We don't have the data for that. So, you have to individuate for what feels right for you.

Dr. Kat Toups:

But back to the paleo. So, the gluten destroys the lining of the gut. We talked earlier about the leaky gut. And we know that it doesn't matter whether you're allergic to gluten or you have celiac. Okay, that's a more extreme case. And obviously those people need to 100% avoid everything with gluten. But even if you're not allergic, the wheat that we eat these days has been, not genetically modified, but it's been bred and hybridized to have higher and higher gluten content. And it seemed like a good idea at the time when people did that, if we have gluten as a protein. And so, if our grains have more protein, then it's going to feed more hungry people, right? People thought, somehow, messing with mother nature would improve the nutrition. But what happened is it was too much gluten for our systems.

Dr. Kat Toups:

And then, we know now that it elevates the zonulin protein that causes leaky gut. It causes those microscopic holes. So, that's a factor for everyone. And so, with my patients, that's my line in the sand. At the very least, cut out the gluten. There's so many options. When I first started eating that way 12 years ago, it wasn't so easy. But it's easy now. There's a lot of options. But we know that all grains, if nothing else, from the glycemic index, are bad. So, if you have a tendency toward high blood sugar, you should be cutting out the grains. And then, we get into other foods that are inflammatory.

Dr. Kat Toups:

So, gluten's the most inflammatory and most allergenic food we eat. And dairy is the second. And some people say, "Okay. Dairy was made for baby cows. Is it really made for baby people and big people?" And you know what? Not everybody has problems with dairy. They don't. But if I have people that are sick, that are inflamed, that are having immune problems, I want them off of the dairy as well. And then, sometimes you have to dig deeper. Sometimes people have to do elimination diets. They have to eliminate the soy, the eggs. There's different things. But does everybody have to do that? No. And sometimes, you just cut out the gluten and the dairy. And you see such rapid response in many, many symptoms, that it'll give people the feedback from that.

Kirkland Newman:

Is that because, essentially, the gluten and the dairy and these allergenic foods can cause inflammation in the gut, which then become systemic, and then causes neuro inflammation? Is that the mechanism?

Dr. Kat Toups:

Yeah. Exactly. Exactly. So, you were asking about the keto versus the paleo. And a paleo diet pretty much is no gluten, no dairy, and as you mentioned, higher fat and lower carbs, and of course, trying to eat organic non-toxic natural foods, non-processed foods, right? It's a good diet for everybody. I mean, there's nothing controversial about that causing any health problems. And it can help so many health problems.

Kirkland Newman:

Exactly. And then, one of the things you keep coming back to is blood sugar and low-glycemic index. And presumably, processed foods and sugars are to be avoided at all costs. But what is the mechanism that

high blood sugar... How does that cause neurodegeneration? Is it an inflammatory process through the sugars? Or what's the mechanism for that?

Dr. Kat Toups:

Definitively. But the high blood sugar, it dysregulates a number of things metabolically. I believe you've had some other talks with Dr Lustig, who's an expert in that. So, I would defer on the mechanistic stuff. I just know when you get diabetes, and I have had patients from some of the psychiatric drugs get admitted for diabetic ketoacidosis. And that's a life-threatening thing. You're in ICU and your blood sugar gets so dysregulated that all the other electrolytes get imbalanced. But we know that the sugar is directly toxic to the blood vessels, the organs, and the neurons. It's destructive. And I can't really definitively, I'm not an endocrinologist, I can't really say precisely how, but it's a huge factor.

Dr. Kat Toups:

So we measure the hemoglobin A1C. And that is the measure of your blood sugar control over the last two to three months. So, it doesn't matter that you were cheating this last week. That's a measure over a couple of months. And looking at the levels. Now, when your level gets to five, 5.7, that's called pre-diabetes. Okay? But what if you're 5.6? Are you okay? Not. Not. No. Because maybe in three to six months from now, you're going to pop over. And that's what happens. So, you want to get that as low or as improved as possible. And I was actually shocked at how quickly we could bring those numbers down when people really were doing a strict diet and exercise and lifestyle program, which I got to see in my clinical trial.

Dr. Kat Toups:

I had people that came in with A1C of 5.7, 5.8. And in three months, they had come down to 5.1, 5.2. I've never seen that before in my experience. I know that, over time, we can get these numbers down. But they were on a strict ketogenic diet. They were exercising six days a week. They were doing heartmath for a meditative component. And they were having to get adequate sleep. And they were doing intermittent fasting, or time restricted feeding. And the time restricted feeding does seem to be important. We know that the less calories you eat, the longer you live. And I believe you probably had experts on autophagy and diets and fasting. I mean, that's a big topic. If you haven't, then we'll get you some for your future talks.

Dr. Kat Toups:

The time restricted feeding is compressing your calories each day into an 8 to 10 to 12 hour period, depending on what your system does. And if you are going for 12 or 14 hours without eating, and your blood sugar is not already super high, you will start trending down into a ketosis state. And that induces autophagy, which is causing our cleansing mechanism of our systems to break down stuff that we don't need anymore, and clean out things. And so, instead of having to do strict fasting... and there's beautiful stuff with fasting, fasting mimicking diets, and beautiful data with cancer, and all kinds of autoimmune conditions. But it's an easy thing. Just pick your comfort zone. I was looking at all the data of my patients, and we were tracking how many hours were they fasting at each visit. And they would start out maybe fasting for 12 hours of the day. And then, I saw over time that most of them were increasing. They were going to 13 hours, to 14 hours, to 15 hours. And so, the longer you do that, your body does adapt, and it shifts, and you get more comfortable just compressing your calories into a window like that each day. And some people really want to eat right when they wake up. And then, they'll stop eating after 6:00

PM. And other people just don't like to eat breakfast. And they'll wait until the afternoon to eat. But definitely, this is a whole hot area of research with beautiful data coming out with the fasting. So, that's something that anybody could do now.

Dr. Kat Toups:

The caveat is, when people are under a lot of stress, and their adrenals aren't functioning well, they have trouble managing their blood sugar. And sometimes, when people are having a lot of stress and adrenal issues, they need to eat little small meals all throughout the day, or their blood sugar just crashes. And okay, if that's you, then don't fast. And people know who they are when they have that issue. I used to be one of those people. I had to eat every two hours for a long time. And now, I can fast for quite a long time, because I've done a lot of healing work through the years that now I can handle that.

Kirkland Newman:

And that brings me to two points that I want to cover. One of them is the hormones, which you mentioned in the beginning, whether it's cortisol... And I know that when you fast, you can get high cortisol.

PART 2 OF 4 ENDS [01:00:04]
Kirkland Newman:

And as you point out, if your adrenals are compromised, then that can be quite detrimental. And the other is mitochondria because one of the things I know from talking to Ray Griffiths about mitochondria is that fasting is one of the best ways of boosting your mitochondrial energy. And we know that mitochondria dysfunction is a big part of neurodegeneration. And so can you talk a little bit about the mitochondria in terms of neurodegeneration, or is there anything significant to say about that?

Dr. Kat Toups:

So the mitochondria are in all of our cells except our red blood cells. And there are energy generating components, and they're fascinating little creatures. But they do a complex biochemical process, the Krebs cycle, and ultimately make ATP, which is our cellular energy. And that drives everything in our body. Now what needs the most energy in our bodies is our heart and our brain. They're the highest metabolically active. So when we don't have enough metabolic energy, those are the two things that suffer. With aging, our mitochondrial function decline, decline, decline, decline. And when they don't function enough, multiple things will happen that will lead to our death. So there is an extra declin that we have that at a certain point in our lives, our organs and our systems are going to say, "I'm worn out here," right?

Dr. Kat Toups:

But in the meantime, we want to support them the best that we can. Now, mitochondria are sensitive. They're damaged by all kinds of things. So all of these things we're talking about, infections, toxins, not having the right nutrients. You need all of those things for your mitochondria to function well. And there's a whole other science that's happening of how you exercise and train and being in the zone to have training, how much oxygen you're consuming is going to affect your mitochondria as well. So many of these things all come together to affect our mitochondria. So there's not any one thing that's going to help your mitochondria. But you mentioned the fasting and the nutrients. One of the things is certainly

many of the nutrients, the vitamins and amino acids and things that are known to support the mitochondria, also have cognitive benefits. So it just tells you, of course, tied in that is, if your mitochondria and your brain aren't functioning optimally, your brain isn't going to be happy. So when I work with what nutritional supplements do people need, those basic mitochondrial nutrients are primary after the basics.

Dr. Kat Toups:

I mean, let me just say, basics for everybody, good fish oil, right? The fish oil for the inflammation, for the lipids. For all of the benefits of fish oil, the brain is fat, our brain is 60% fat. And you think about it as a spongy, white material that's fat. And so one of the damages that we did to our brains, and this was one of my factors actually, you asked me about the different things for me. My cholesterol was too low. So I grew up in the low fat era, right? We were trained, "Eat low fat," right? "That's healthy for your heart and low fat, low, fat, low fat." So that's what I did. I followed directions and I ate very low fat. And my cholesterol was always 135 and that's really low. And I always thought, "Oh great. I'm not going to get heart disease, but guess what? I got dementia, which one would you take?" Right? You know? And so what I learned was, of course, that we actually need that cholesterol for our brains to function. And what we've learned now is cholesterol is not the enemy, unless your cholesterol is sky high at 300. Because if it's that high, you're going to have other lipids out of balance. It's not a big deal, there's other lipid sub particles that cause the atherogenesis or the buildup in the arteries and the veins. And so cholesterol is not the enemy.

Dr. Kat Toups:

So one of the ways that I got my brain back online of many things that I did was, I changed my diet to eat a high fat diet. I eat fats at every meal, and I was able to get my cholesterol up to 200. And then the first time it came at 200, the doctor in me of all the years of being told cholesterol 200 is too high. It's like, "Oh my God, my cholesterol is 200." And then I had to calm myself down, "Now, remember all that you've learned what you need for cholesterol." There are myelin sheaths around our nerves. And they conduct the impulses down our nerves. Those myelin sheaths are made of fat. So if you don't have enough cholesterol, enough fat, you're not going to have good nerve conduction in your brain. And then the cell membranes of the neurons, your phospholipids, they're lipids, they're fats, and they're phosphatidylcholine, phosphatidylserine, phosphatidylethanol. So if you don't have enough fats, the actual structure of the cells in your brain is going to suffer as well.

Dr. Kat Toups:

And then there's even more to the cholesterol story. So cholesterol is the precursor to all your sex hormones. So you want a segue into hormones, and cholesterol turns into pregnenolone, which then can turn into testosterone to estrogen, progesterone. So if you don't have enough cholesterol, then you're not going to be making enough sex hormones. And it segues down into one of the precursors for your thyroid hormones as well. And we need all these hormones for everything in our body and our brain to work. So cholesterol is such an important nutrient.

Dr. Kat Toups:

I have a beautiful study that I like to share with people, well not a study, but it was a meta analysis of all of these different studies looking at cholesterol and mortality. And this study, it was done by the World Health Organization. And they found that if your cholesterol was in the range of 200 to 240, you had the

lowest all-cause mortality. That means you're likely to die from anything when your cholesterol is in that range. And they found that lower cholesterol levels actually had higher levels of infectious and parasitic diseases. And of course, we know that there's a higher level now of brain disorders with that. And it's a factor for many of my psychiatric patients. It's known from the autism community, that a lot of children with autism, they have multiple metabolic disturbances, they tend to have very low cholesterol. And when they feed these kids high fat, high cholesterol diets, their behaviours can start improving. So the cholesterol is just one more factor that is important to know.

Dr. Kat Toups:

Let's segue a little into the hormones. So those hormones, as I mentioned earlier, we have receptors for all of these hormones in our brain. And I started studying the effects of hormones in the brain and reading all the literature papers. I had a huge file long before I did functional medicine. It was pretty clear that those hormones were affecting things psychiatrically. I remember maybe one of the first things I learned was DHEA. And even 20 years ago, I was using that as augmentation for depression and there's clear data for that. So getting all these hormones right, they're trophic for the brain and we need them to function. And some people say, "Well, okay, but I don't want to take hormones when I lose my hormones because that's not natural." But until 150 years ago, it wasn't natural to live, I mean, we are in the generation with the longest life expectancy, it's less now for our children because of the toxicities in the world. But now it's not uncommon for people to be living into their '90s, right? And so you've got going knowing that because at least in women, most people by the early 50s are completing the menopause transition. They could live 40 more years, almost 40% of their life, with no hormones. Well, so what happens is, is that the neurons can start to atrophy and degenerate without those hormones. And there was a study that I really liked that was done out of Stanford. And they took women that were at high risk for Alzheimer's, survey for dementia, had dementia in their families, and that had been on hormone replacement. And they randomised them either to stay on their hormones or stopped their hormones. And they followed them for two years. They did head scans, they did neuropsych testing. And they found at the end of two years, that 100% of the women that stopped their hormones had neurodegeneration. That they could see on their head scans and they're testing. And it didn't matter whether it was bioidentical hormones or synthetic hormones. It just mattered that without those hormones, people were declining. And it still didn't say the hormones directly prevented their cognitive decline. But it's a huge factor, and we see it. Some people, it's quite dramatic when we put them on hormones that have been off of hormones for a long time. Some people don't really notice a difference, but other people have a major awakening cognitively.

Dr. Kat Toups:

By hormones, I mean, all the hormones. So like testosterone, women have testosterone receptors in their brain. Men have estrogen receptors in their brain. We might have differing amounts that we need. Men don't have as much estrogen as women, and we don't have as much testosterone as men. But all of these things can make a difference. I treated one gentleman, not for cognitive decline. He was 85 years old, he had a stubborn depression, which came in late life. It had come two years before. He never had depression before, and he couldn't sleep and he was suicidal. And they put them on one antidepressant and that got him to sleep, and they put them on another one and that took care of his suicidal tendencies. But he sat in a chair for two years. He didn't want to do anything. Just sat in the chair, didn't want to see people and had been previously working. He was an exception to a rule. I don't like rules, but the caveat is that it's never just one thing. Well, in his case, I tested all kinds of things. And really the only thing I could really turn up for him at that time was, his testosterone was really low. So we checked

with his urologist, we put them on testosterone. And a month later, he got out of his chair at 85 and went back to work.

Kirkland Newman:

Wow. Right.

Dr. Kat Toups:

Right. But since that time, I've seen it with other younger people. I mean, unfortunately, with the testosterone, it's a factor for men with aging. Women, we lose our hormones more abruptly. It's usually a 10-year process and then they're done, but men have andropause and their testosterone declines. But what we're seeing now is that lots and lots of younger men have low testosterone. And we have all these endocrine disrupting hormones in our world and toxins and infections. So I especially see it in the young people with Lyme disease or mycotoxin illness. When you have infections that are in your brain and wreaking havoc, well, the hormones start in the brain, right? We have the HPA axis, the hypothalamus the pituitary, and then that goes to the sex organs and the adrenals. And that's directing the cascade to make the hormones. So if you have anything in your brain and disrupting the functioning, that whole hormonal access gets disrupted. So it's really important to look at hormones and everybody to look at all their thyroid hormones, look at their sex hormones, look at their adrenal hormones and see what's happening. Because sometimes you've got to add in things to give that trophic support for the brain to work better. So I have young men, 20 years old and in their early 20s that need testosterone. They should be at the top of the range with testosterone at that age, and they're low or even below the bottom of the range. So their brains are crying out for that hormone.

Dr. Kat Toups:

Some of it is even easier low-hanging fruit. So when I test with labs, I do a lot of lab testing because you can't know what's wrong unless you have a test, right? And we're sometimes accusing functional medicine of testing too much, but I do a lot of testing so that I can figure out all of these systems I need to go after and help support people. Because if you fix the hormones, but you don't fix the infections, they're not going to get well. If you fix the infection, but you don't fix hormones... I mean, you just got to do it all. But with the hormones, in addition to the usual suspects like estrogen and progesterone and testosterone, we measure the pregnenolone and the DHEA. And pregnenolone, low pregnenolone is an independent risk factor for dementia. I don't know why the other hormones are prescription, but pregnenolone and DHEA, which are hormones, are over-the-counter supplements.

Dr. Kat Toups:

Now, you shouldn't take them if your level is not low. So too much of a hormone is not... We want the sweet spot of everything. We want to give the body what it needs, but we don't want to overshoot it either. But pregnenolone is something that it's easy to test with the lab test, Quest and Lab Corp in the US. And then you can take the supplements to get your level around 100, and then you check it and make sure, and same thing with DHEA. And DHA is also a stress hormone. And so that gets depleted with stress and your adrenals need that. But you can measure the levels and supplement those with hormones, with just supplements, right? But again, the caveat, measured the levels, don't take too much.

Kirkland Newman:

Understood. And that makes total sense. And I think the final hormone, which I think is key is cortisol, the stress hormone. And that brings me to trauma and adverse childhood experiences and trauma and chronic stress, and how depleting that is for the brain and how neurodegenerative that is. What would you say in terms of levels of cortisol, trauma, adverse childhood experiences, what's the mechanism of how that impacts the brain and obviously what would you suggest doing about it?

Dr. Kat Toups:

Yeah. So the adverse childhood experiences, we know now are highly correlated with immune problems later in life. Adverse childhood experiences when you have stress and it doesn't mean that you didn't have to be raped or beaten, there's all kinds of levels. You could have a parent that was bipolar, you could have a parent that on and off had drinking problems, you could lose a parent early in life. Huge stress, right? Huge trauma. So there's all kinds of forms, and it's not just the classic PTSD things that people think about. But when you have early stress, it does activate your limbic emotional system. And you feel in danger and even when the danger is gone, your body can still keep feeling that level of stress.

Dr. Kat Toups:

When you're in a high stress state, you're in sympathetic overdrive. So we have a sympathetic nervous system and a parasympathetic nervous system. And the sympathetic nervous system, we need it to kick in when we're running from the tiger, right? That's the classic analogy. You need to just have everything shunting to your legs to run away from the tiger and be in that fear mode to save yourself. But when you're chronically in that mode, and you're not going into parasympathetic, parasympathetic as I was saying, calm, chill state, well, if we want to heal from anything, we have to be in a parasympathetic mode. When you're in that sympathetic, running from the tiger, there's no healing taking place, that's survival, right? So we have to have times that we can be in parasympathetic mode.

Dr. Kat Toups:

I think in my own healing, I was getting better restricting my diet and taking this and doing that. But it took me being a pretty driven type A person a few years into that healing path to really grasp the benefits of more of the mind-body modalities to further facilitate the healing. And actually, for our dementia protocol that we did in the study, patients were required to do HeartMath, which I call meditation for non-meditators. So there's many different ways to get into a parasympathetic state. We know that meditation 12 minutes a day can change your brain. That data is irrefutable. Meditation and exercise are the two best ways to change your brain because they increase your brain derived neurotrophic factor, BDNF for sure. And that is a hormone that basically it's neurotrophic media is giving life to neurons. It helps to create new connections in our neurons.

Dr. Kat Toups:

So as we're destroying things from various factors in our brain, we need to keep repleting and having neurogenesis. So exercise and meditation are the two best ways to do that. And they're free, right? You don't need money, you don't need to go to a doctor. You just need to find what exercise works for you that you can sustain, and what kind of meditative thing. Now, look, you could go on a walk in nature, leave your cell phone, listen to the birds, smell the smells, notice the light on the leaves and the wind. And that is a meditative state. You don't have to be sitting in lotus position and turning off all your thoughts, but just quieting down your brain and coming into your body. And it's different ways, some people do Tai Chi or Qigong. There's different ways. But HeartMath was a way in our study to just have

everybody doing the same thing. And HeartMath has really nice data. It's a little device that you can clip onto your ear these days, and it's measuring your heart rate variability, and they synchronize that with your breathing. And they have beautiful data showing that when you breathe and synchronize that and improve your heart rate variability, it improves the stress response. And so that's what we did in the study. Though I have to say, many of my patients at the end of the study did not want to continue with that. But during the study they did it, and we then tried to problem solve. Well, what else could you do in your life that you have some time every day to meditate?

Dr. Kat Toups:

And the thing with meditation is this, they say 12 minutes a day. I mean, obviously more is better, but 12 minutes a day can change your brain. And it doesn't even have to be 12 minutes at once. So you could do four minutes when you wake up, do some breathing exercises or and just ground yourself for the day. And you could do that when you get into bed and do it one other time in the day. And it's how do you fit these little things into your life? I mean, sometimes personally I combine exercise and meditative things. I'll do my Pilates reformer, but I'll listen to a meditation. And as soon as I listen to a guided meditation, I start breathing, coming into my body, calming down my brain. But I do it at the same time that I'm doing the exercise because sometimes I can't fit in everything in a day. So the chronic stress response is huge and we have to work with that if we want to heal.

Kirkland Newman:

Yeah. A 100%. Is there something physiological as well in terms of the hippocampus having more cortisol receptors? And then if you have chronic high elevated cortisol, does that burn out those receptors?

Dr. Kat Toups:

Yeah. I can't speak definitively to that, the negative is they burn out the receptors. But chronically high cortisol is disruptive. I certainly know that, and we know that chronically high cortisol is destructive particularly for the hippocampus and the amygdala. These limbic structures where they're not only controlling our memory, but they're our emotions. Our memory centers or our emotional centers are intricately linked in the brain. There's overlap with the functions in those things. So yes, stress reduction is absolutely key not only for your brain, but you need it for all aspects of your health. And the world has become more stressful.

Dr. Kat Toups:

I mean, all of the computers and gadgets are things that are supposed to make our life easier, we're so bombarded now. It's fun that I have a computer and my cell phone. I mean, I have so many windows open and I have so many Dropbox stored on there and my files and it's amazing, right? But you know, the constant bombardment with data and what that's doing, right? We're all turning into these dopamine junkies, we need these hits from the data and the technology. And I suspect we're going to be seeing that we're shifting our brains pretty rapidly, evolutionarily by all of the high-intensity inputs that, especially our children now have grown up with.

Kirkland Newman:

Disaster. I totally agree with that. And one final thing is supplements. So we talked a lot about the basic nutritional deficiencies that could be feeding into cognitive decline and conversely which are the supplements that we should be taking to boost those nutrients so that we have optimal brain function?

Dr. Kat Toups:

Fish oil, B complex, and vitamin D. Those were my three basics that everybody needs, including our children. I've learned our soils have all been overgrown and we've had such a high need to feed all of our burgeoning population that unless people are actively amending the soils, even when you're eating an organic whole foods diet, you can be deficient in different minerals and nutrients. So vitamin D is something that is worth talking about. It is a neurohormone. There are receptors in your brain, the vitamin D is not only affecting your bones, vitamin D affects 200 things in your body. It's a really important nutrient. And it's coming to everybody's awareness with COVID. Because we know if you have a low vitamin D level, your risk for getting a serious COVID infection and subsequently dying is much higher. So at least it's helping people to have awareness.

Dr. Kat Toups:

I've had people come into me with severe depression, suicidal, crying all day, can't function and I put them on fish oil on the first visit. I just say, "let's go on some high dose fish oil and vitamin D. And we all start at one level and I'll measure their level and optimise that. I like to see the vitamin D level at 50 to 80. So the range on the lab test is 30 to a 100. But again, we don't want you to be at 30 because that's at the bottom of the range. You want to be in the mid part of the range. So we shoot for 50 to 80 with that. And it's quite a range. I would say that the majority of my patients here in the San Francisco Bay Area need 5,000 to 10,000 iuse. And many doctors are like, "10,000, that's too high."

Kirkland Newman:

Everyday?

Dr. Kat Toups:

There are several different genetic polymorphisms with vitamin D. Now I just fixed it, but I used to be able to look at those things and I could say, "Okay, you have a VDR tech mutation and you're going to need more vitamin D." But just measure the levels, it's easy. I personally need 10,000. And when I cut down to 5,000, I'll just fall off the curve and I'll go down to 30 or lower. So it's a function that if you live at the equator... we evolved at the equator. That's where we evolved to extract the sun and turn it into vitamin D. And so people at the equator don't need as much vitamin D as we do in San Francisco, or you do in the UK, right? We're far from the equator. And now I've tested hundreds and hundreds of patients since I've been doing functional medicine over the last almost 10 years. And I've only had two patients that had 'okay' vitamin D. And one had a weird genetic thing, and her vitamin D was sky high and nobody knew why. She'd seen a specialist, and nobody knew why. So she was a very outlier. And then I had one woman that came to see me from San Diego. And she was a swimming instructor in San Diego. So much farther south out all day in the sun, but she told me in the winter she had to supplement. So she knew her patterns, but in the summer she was okay. So again, she's an outlier. Most of us aren't out in the sun all day in San Diego.

Dr. Kat Toups:

The vitamin D, just critical. And so I was going to say, so I have people come in, and one of my very early functional medicine patients and like I said, she was crying all day suicidal. I said, "Okay, let's change your diet. Let's take off the gluten and the dairy for the inflammation. Clean up your diet and start on that fish oil and the vitamin D and the B complex." Now all the B vitamins are huge for the brain. I mean, we've

long known that B12 deficiency causes dementia. We know that vitamin deficiency like people that are alcoholics... When I used to work in psych ER, you'd give them a shot of vitamin if they had an alcohol problem because it causes dementia. Different form than Alzheimer's, but causes dementia nonetheless.

Dr. Kat Toups:

So B vitamins are huge for the brain. And that particular lady came back the next day, and she was fine. We were getting all her lab testing is not back with just those three things, and changing the diet, of course is huge. And maybe giving hope that, "Okay, we're going to figure out what's wrong and get you better." So I think everybody needs those things. The fish oils are anti-inflammatory, the EPA component is anti-inflammatory and the DHEA component is directly trophic for the brain and the neurons. So those were easy and not super expensive and something that everyone can do, right? Now, the rest of the nutrients, it often comes down to testing, right? "What do you need?"

Dr. Kat Toups:

Now, you can read Dr. Bredesen's wonderful book, The End of Alzheimer's. And he talks about all of these different nutrients and supplements. And sadly, I've some of the patients that have participated in a Facebook support group where people are working with Dr. Bredesen's method and doing his stuff. And a great group of people and good researchers. But some of the people there are saying, "I'm spending $1,000 a month on my supplements. I'm taking all the supplements," he said, "No, he didn't mean for you to take all those supplements in there," right? But this is sometimes where it's helpful to work with a physician and test things and figure out what do you need for your body. I mean, there's things that we talked about, the mitochondrial nutrients. I do think if you have any neurodegenerative disease, any chronic disease, mitochondrial support is great. Now, some of the big things with that CoQ10. CoQ10 is a great nutrient.

Dr. Kat Toups:

You can measure the levels of that at the lab. And one of the final steps for your mitochondria to make ATP requires CoQ10. And it comes from organ meat. And so most people aren't eating a ton of organ meats, and I find that low, especially with age. After a certain age, it gets low. So that's a good one and it's good for your lipids, it's good for a million things. But it's good for your mitochondria. I mean, my top three mitochondrial nutrients would be CoQ10, acetyl-L-carnitine and NAC, N-acetylcysteine. And the NAC is one that I want to say in the time of COVID, that's one of my top COVID nutrients. Get your vitamin D right and take some NAC. So NAC turns into glutathione. Glutathione is our most important antioxidant that our body makes. So the antioxidants are our master detoxifiers and helping the inflammation, both of those things.

Dr. Kat Toups:

So we want to have good levels of antioxidants. And when you take glutathione, which you can, and sometimes I'll take both glutathione and NAC. But glutathione has a short half-life, so it doesn't stick around that long. And it's more expensive than NAC. So NAC will gradually turn into glutathione and you can raise your glutathione levels by taking NAC, which is N-acetylcysteine. It's an amino acid that's part of the whole methylation cycle. Then the methylation cycle breaks down toxins and helps to make our neurotransmitters. So the NAC for COVID, it actually directly protects the lung tissue. And it's been used in ERs for a long time for people with respiratory problems. So that's a really useful thing that I find, particularly in a time of COVID, but just know what's going to help all your mitochondria. So

acetyl-L-carnitine, CoQ10 and NAC, those are the top three. And there are many more, PQQ is good. I mean, there's a lot of good mitochondrial nutrients, but it comes down to how many things can you take, right?

PART 3 OF 4 ENDS [01:30:04]
Kirkland Newman:

Just a final question about minerals. What are the two or three minerals that might be recommended? I know maybe zinc or magnesium. Are there any that you would think are particularly of note for cognition?

Dr. Kat Toups:

Well, many of those things can affect your cognition in different mechanisms. Magnesium, the zinc, the copper, the iodine, selenium. We need all things, and we need all things in balance. And for the minerals, they're easy to measure. We measure them. I can measure them individually at Quest or Labcorp or there's a test that I like that Genova does, the NutrEval. The NutrEval is a giant panel that will tell me all kinds of metals, toxins, minerals, nutrient levels, vitamin levels, organic acids. So it's a very useful test to get a great water treatment targets and for people here in the US that have Medicare, it's actually covered by Medicare. Obviously, you need to have a necessity to order it, but if you're treating someone with cognitive decline, you're definitely going to want to be evaluating these kinds of things.

Dr. Kat Toups:

So they're all important but, like everything, you don't want to take too much. Now people do tend to be deficient in magnesium. For whatever reason, our diets in our world, it is probably the most common deficiency that I see. So it is good to measure that it's very important for your immune system and many, many things including your bones. And then the zinc is probably the second most common. Zinc would probably be my third COVID nutrient, but we know vitamin D and zinc low levels are now both shown to increase your risk of COVID. So just ask your physician to measure those. Because if yours are great, then don't take them because you're going to have other things you need to take, right? It's always that balance of trying to customise for each person because you don't want to be taking 40 supplements-

Kirkland Newman:

Yeah.

Dr. Kat Toups:

Right. And if you can fix your gut... I mean, this has, again, come back to the gut. Why do we always start with the gut? It's a root of your immune system but it's got to absorb those nutrients. And if you're not making enough, like with aging, we lose our digestive enzymes. If we don't have enough digestive enzymes, then you can't break down the food into the level to be absorbed properly, right? So that's an issue. Or if you're having a lot of food allergies and your gut is inflamed, you're not going to be absorbing things or you have irritable bowel disease, any number of things affect the gut. So if your gut is not great, then that's going to affect all those nutrient levels. So you can keep taking all those things or you can just go fix your gut and then absorb things better, right? And make sure your diet is targeting the things that you're low in. So that's where some of the customisation comes in for people.

Kirkland Newman:

Understood. What's your top tip for fixing your gut in terms of the gut lining? Apart from removing all the things that are inflammatory to it and reducing your stress, what would be your top tip in terms of fixing that gut?

Dr. Kat Toups:

Well, I guess you've just hit on some of these, Kiki. You're already a gut expert. Stress, certainly. As you mentioned, I think I said they studied the college students at the time of final exams, they all have leaky gut. So stress is an important thing but, of course, it's what are you putting in your mouth? What is your diet? Are you eating foods that are inflammatory?

Kirkland Newman:

And is there a supplement that you can take to help with the gut lining?

Dr. Kat Toups:

There's different things that you can take. Glutamine is actually a very inexpensive and helpful nutrient. It's an amino acid. And I know when I was really sick, I had consulted with one of my IFM professors and he told me, take 18 grams a day. And glutamine is the fuel source for your small intestine. And this is where a lot of this inflammation and food reactions are happening in the small intestine. So glutamine can help restore the lining of the gut, and people that aren't as sick as I was don't need to take that much. Another tip for people that are struggling with sugar and carb cravings and addictions, glutamine can really help the carb cravings and the sugar cravings. And I personally used that some years ago. I was a sugar junkie growing up as a child, ate a lot of candy, had all the cavities to prove that. And since I quit eating sugar in college, I didn't have any more cavities. So there was a correlation and I told you, the stuff happening in your mouth is happening in your brain.

Dr. Kat Toups:

And just a digression, if you have root canals, root canals can harbor these subclinical infections. So that is a really important area that I think we need to be looking at. I am doing something called a cone-beam CAT scan, CBCT. It's like a Panorex, but it's actually a CAT scan, and they can see all kinds of layers and image things. And then I send to a dental radiologist, and I ask them particularly to look at the roots and they can see if the roots... You should have a sharp line for your root, but if it's starting to get fuzzy, then it shows that there's some kind of degeneration happening in the roots. Some people with chronic immune problems can pull their root canals and get better almost overnight.

Dr. Kat Toups:

Many of us have root canals. I've been going now every two years or so to image my root canals and make sure that they're not having any inflammation there that could be tracking right up to my brain. Let me add something that's one more of the low-hanging fruit things that people don't know about like the root canals. It's not that many people know about that. Checking your hearing and checking your vision. And as you age, check those things. It's very clear now in data that if you have midlife hearing loss, your risk for dementia is way higher.

Kirkland Newman:

Wow.

Dr. Kat Toups:

And so, when you're hearing, there's a whole process of things coming in your ear and then stimulating things in your brain, right? And then back to the ear. So if you're not hearing well, you're losing that stimulation. If you're not seeing properly, you're losing your stimulation to your brain. So particularly with hearing aids, they suck. People don't want to have hearing aids. It's a pain, but if you're having trouble with hearing, and even by the time you're 50, I think people should go in. They should get a baseline hearing check. I think most people are familiar with checking their vision, but when you're younger, you don't check your hearing. So check your hearing. Get a baseline. And it's one of those things that if you need hearing aids, get them sooner rather than later. Don't wait until it's really bad. That's, I think, the low-hanging fruit, other ways to protect your brain.

Dr. Kat Toups:

And we didn't talk about other things to regenerate your brain. We mentioned the exercise and the meditation. So I just want to say, I talk about the three Rs, the way to remember what you need to do for dementia, right? You need to remove the things that are hurting your brain, you need to replace the nutrients and hormones and things that you need, and then you need to regenerate your brain because our brains can regenerate. When I went to medical school, we were taught that you have all your neurons by 18 and that was it. And after that, it was going to be downhill. You're going to just be losing them. And that's not correct. Now, we know about things like BDNF, and there's a new hormone called irisin that was discovered recently that also has similar effects to BDNF and comes from exercise or sleep? So we keep making synaptic connections in our brain, and they've studied people at the time of death, when they were terminally ill and ready to die and put them in a scanner and given a memory task to do, and they could see new connections happening in their brain. So we want to keep stimulating our brain. And that's the whole idea of the vision and the hearing, right? But other things, retirement is a risk factor for dementia. So if you retire and you just stay home and watch TV and are not having a lot of interactions, your brain is going to degenerate faster, so the exercise and the meditation.

Dr. Kat Toups:

And then also, I have people do brain training. In the old days it was do crossword puzzles, but now we're way past that. Crossword puzzles are fine, but we have sophisticated programs, like BrainHQ is what we used in our study. You can purchase that usually between $79 and $99 a year or something, and you can have it on your cell phone or your computer. It's all these brain games, and they are doing fantastic research and validating all kinds of things happening from their brain training. One of their games is called Double Decision, and that has been shown to be the most effective at preventing dementia down the road. So they took large numbers of people, and they had them do 40 hours of training on Double Decision. And then they looked like it was 10 years later. And I think these were somewhat older people. And 10 years later, their risk of dementia was 20% lower or something.

Dr. Kat Toups:

And then they had one group of that cohort where they get a booster training of maybe 10 more hours or something in the next year. And their risk of dementia was 40 something percent lower just by doing a total of 50 hours on this brain thing, 10 years earlier. So if you're constantly playing these kinds of games in the BrainHQ, they have different focus. If you focus on the visual focus one, it's probably got some of the strongest games for dementia. But what happened in my study is some of my patients, they were

required to do... what was it, 12 or 15 minutes a day of this. And some of them did a lot more and you could see people who did it more for some of them, more was better.

Dr. Kat Toups:

But on the brain HQ, they measure where you are and then you can see your own improvement with that. And I think the average improvement in my study cohort was... I don't want to tell you definitively because I'm not sure, but it was somewhere in the 22% to 23% to 24% improvement in a short time from doing that our improvement on those games. And so some of them got burnt out, they did all the training on the visuals, and then they shifted to the auditory focus, and they did different ones, but they even have data that some of their games will help depression. Some of them will help ADHD. So it's the notion of we got to keep stimulating and rewiring our brain and keep making those new connections.

Kirkland Newman:

Yeah. And I mean, in some ways this COVID, the isolation, especially the older people have, has been so detrimental to them. I see my parents who haven't seen anyone for months and months because of COVID, and it's a disaster for their brains and cognitive decline essentially.

Dr. Kat Toups:

Do encourage them to set up Zoom meetings with people, their friends, make those dates because, yes, you're absolutely right. Loneliness and isolation, they're terrible for our brain and our nervous systems. So more credence to the infections in the brain, so it turns out in the Spanish flu that we had in the early 1900s, there was a huge outbreak of Parkinsonism. And we're seeing the same thing now with COVID, we're seeing some cases already. There's been a few in our literature that I've read about where people had COVID, and now they're manifesting Parkinson-type symptoms. So it's just definitely giving us more and more credence on a big, large scale here that infections are causing trouble smelling, brain fog, Parkinson's symptoms, they're huge for the brain.

Dr. Kat Toups:

It comes back to keep your immune system strong, right? Keep your gut healthy. What are you eating, and get into that parasympathetic mode, exercise, sleep. We didn't talk about sleep, but testing for sleep apnea is phenomenally important. You should test even if you don't snore. I've had thin women who don't snore that turn out to have sleep apnea. So yes, if you're a big burly man with a thick neck and you're overweight where the belly is pressing, okay, you're going to have airway problems. Some people it's obvious, but it's not always obvious. And when you're having sleep apnea all night long, you're having periods of not enough oxygen, right? And what needs the most oxygen? Your brain and your heart. So you will get dementia from chronic sleep apnea, and you will get congestive heart failure as well because it puts such a strain on the heart.

Dr. Kat Toups:

And now there's all these good home sleep studies. So even the sleep labs now can give you a home sleep study to do. I actually leased a device and had my patients take it home and do it for a couple nights in a row. I usually have them do it for three nights and two nights may look fine, and then I'll hit a third night, and I'll say, "Something's wrong here. Let's get a big sleep study." And they won't have sleep apnea and some people don't want to do it because they don't want to use CPAP. But if you have a

milder case, you can have dental devices that pull your jaw forward and open up your airway at night. And so definitely, sleep is essential and oxygenation in sleep.

Dr. Kat Toups:

But there's always one more thing to say, I'm sorry, our brains detoxify when they sleep. So we just learned a couple of years ago about the glymphatic system. We know our lymphatic system is that we have this whole system of lymph and lymph nodes and that's trapping toxins and helping to excrete toxins from our body. Well, the glymphatic is the lymphatic system in the brain. And it turns out it works when we sleep. So when we sleep, they discovered, it's so fascinating but we have the ventricles that our cerebral spinal fluid goes into our brain. And then there's some big areas called the ventricles and those ventricles, while we're sleeping, they expand quite a bit and start churning like a washing machine and agitating things. And they say it's like cleaning out the accumulated toxins from the day and putting it into your lymph and excreting it, so getting your proper sleep is a huge thing.

Dr. Kat Toups:

If you're busy working on a project and you only got six hours of sleep last night, okay. You might notice your brain isn't quite as clear, but you can get by with that. . If you're chronically sleeping six hours a night instead of eight, do the math and see how much you're depriving your brain of detoxifying, right? That's 14 hours a week. How many hours a month, how many hours a year that is going to cumulatively add up, so working with the sleep if you have a sleep problem. And there's many, many factors that can contribute to poor sleep, and sleep apnea is only one of them. But again, that's something that needs to be addressed now to save your brain later.

Kirkland Newman:

Understood. Well, Kat, you've been so amazing. You're so thorough and so wonderful and that's so much amazing information, and you've given our listeners so much information on how to prevent and possibly even reverse dementia. And I think that's my final question, which is a message of hope because the traditional view is that, in mainstream medicine, is that you cannot reverse dementia. But you and Dale Bredesen are saying, actually, you can reverse dementia.

Dr. Kat Toups:

Right.

Kirkland Newman:

So tell us a little bit about that. Is it possible to reverse dementia once it sets in? And at what point does it become the point of no return?

Dr. Kat Toups:

Right. There is a point of no return. And so it's vitally important, if you feel like your brain is having trouble, to take action, okay? And I'll tell you what happens. You take action and you say, "I'm having trouble. I'll go to the doctor. And then the doctor will do a little testing and say, "Well, it's fine. It's aging." Okay. But you know what, there's plenty of people in their 90s that are brilliant. My father-in-law in his 90s was writing all kinds of formulas. He was a brilliant Caltech professor of aeronautics and fluid mechanics, and he and my husband would be writing out formulas, and his brain was working. And I

think we need to be looking at people like that. Why is their brain working and what have they done to have that?

Dr. Kat Toups:

So it's not inevitable to lose your memory. When you start having those senior moments, when you have that little spidey sense or that intuition, like, "I don't think my brain is right," it's not. And I think Dr. Bredesen is the person who coined the term subjective cognitive impairment. So might not be clearly measurable, but you know something's wrong. And maybe as simple as the hormones, so women will have trouble saying the right word, remembering the word, or having a word substitution that happened to me in my earlier 40s. And I went to my doctor and I said, "I'm saying the wrong words, I'm having trouble remembering things where I'll say open the door when I meant to say open the window." And my doctor said welcome to peri-menopause. That's pathognomonic of perimenopause, meaning it's a hallmark feature.

Dr. Kat Toups:

Well, I felt okay for a few minutes, and I got home and I thought about it, I go, "Wait a minute. 50% of women are going to get Alzheimer's. So what if those of us that are having these symptoms earlier in life is that going to predict? And I think there's some correlation there as I've indicated. So look at that and be aware. I had somebody in my study and one of my patients in the study was a physician. He was an engineer, and he developed technical devices. So a really great brain. And he, in his late 50s, he said, "I'm having trouble." He went to Kaiser and they tested him, they did neuropsych testing, and they go, "Well, really everything's good except your verbal memory, so don't worry about it." Okay. His verbal memory was an 18th percentile. So here's a guy with like all this advanced education, high-level brain, and his verbal memory was in the 18th percentile? That's a problem, right? But they told him he was fine, so he didn't do anything.

Dr. Kat Toups:

And a couple of years later, he heard about our study and came in for the study because he was having more problems. And so at that point, his verbal memory was down in the 4th percentile. So it was very, very low. Very low. And so he'd lost a lot of ground. But then, by the end of the study, he was around the 94th percentile. He had totally shifted that by everything that was done. And again, it wasn't any one thing. He had all kinds of things that we worked on, and he will need to continue to work. So when people come in that are already getting into dementia, they can't do a program, get their brain back and then say, "Okay, I'm all better." No, this is a lifestyle thing, right? You got to keep up with all of these factors to keep the degeneration at bay.

Dr. Kat Toups:

But I tell people, dementia is not a death sentence. In the past, and it still is, if you go to the academic medical centers and they say, "Okay, we can give you this medicine. It might slow you down for a year." And we didn't talk about the meds, but there's some genotypes that, actually, if you take the cholinesterase inhibitors, like Aricept, will actually make your dementia go faster. And at best, it's reported to slow things down for a year, which is neither here nor there in the scheme of a 10-year process. Some people do find some immediate benefit in their functioning. If it's not making you worse, maybe that will help a little, but we can help so much more by dialing in all these other things.

Dr. Kat Toups:

And so I'm super excited to be able to soon finish our data analysis and publish the data from our clinical trial because we're going to be able to show people that are still not sure that any of this is worthwhile because, look, it's a lot of effort, right? To change your diet, to exercise, to meditate, to sleep, to do your brain training, it's work to do that. But people got in a groove, and we gave them a lot of support to move the needle really quickly and I was actually shocked at how quickly things could improve. Did everybody improve? No, they didn't. I mean, I saw improvement in all of my patients, but some of them, there were two of them that had some improvement but not as much as some of the other people did, right? I think six or seven of my patients would no longer qualify to be in a study.

Kirkland Newman:

Wow.

Dr. Kat Toups:

I think some of them score better than I do now.

Kirkland Newman:

That's amazing.

Dr. Kat Toups:

So it is definitely not a death sentence. There's different kinds of dementia and different reasons. We would be foolish to say that everybody can get well, but is it worth trying? Yes. Please try, please try. I mean, the brain is the most important thing to save, and it's getting clear that we can reverse things. To see how far gone I was and all the things that I've been able to learn and do. And when I first started learning functional medicine, I had a sieve for a brain, I couldn't remember a thing. I got really good at writing everything down, and I have great filing systems because I couldn't remember anything.

Dr. Kat Toups:

I created study groups and community to help me learn things. But when I looked at where my brain was at 50, and now I'm almost 62, I would have been dead by now. I used to say I would have been drooling in a nursing home long ago, but that was now 12 years almost. If I hadn't have done all the steps to take back my brain, I would not be in any reasonable shape at this point. So definitely, it's so exciting, right, that we don't have to accept dementia as an inevitable consequence. And there's all of this low-hanging fruit and then the deeper fruit that we can search out with infections and toxins in the immune system and all of these things.

Kirkland Newman:

And it's worth the effort. And I must say, Kat, you're amazing. And your brain is firing on all cylinders, I have to tell you. I mean, you're totally amazing. And if people want to find you, obviously I'll put all your details in the show notes, but where can people find you?

Dr. Kat Toups:

I'm not super great on all of the social media, but I have a Facebook group, and I do try to post things on there that I think are important and interesting and helpful for the brain. I'm trying not to force the

doom and gloom, but what is the good news? I think I just posted something about stem cells. We didn't even talk about some of the other regenerative therapies, but there's some signals with stem cells. And now probably some data showing people that had spinal cord injury and problems with their muscles or incontinence or this or that, and with the treatment with stem cells, were having improvement. And I know a lot of the stem cell people have been saying that some of the ID stem cells are showing improvement in cognition.

Dr. Kat Toups:

So whole other area, sorry, I'm digressing. But anyway, so I have a work Facebook group, Kat Toups, MD - Functional Medicine Psychiatry & Dementia. I have a YouTube channel and when I get access to talks that I do that I'm able to share, I put it on the YouTube channel. I do have a talk on there from 2019 from the age management from medicine group. And that was from a big medical conference and it has slides. And if people really want to know things in more detail, some of these nutrients and infections, and what do I test, I go through a lot of that in that talk. So I would say those are probably the two best bets right now.

Kirkland Newman:

I'll put links to that in the show notes. And of course your website, which is Bay Area Wellness, is that...

Dr. Kat Toups:

Yeah, Bay Area Wellness. And you could also search the title of the book that I'm working on is Dementia Demystified. If you go to dementiademystified.com, it'll go to my website. So when I get that done and ready to launch, I'll put the announcements on all those places for people. I hope it's going to be a really practical book on how do you think through and work through all of these things.

Kirkland Newman:

Well, Kat, we're all so excited for this book. We can't wait, and the world needs it desperately so we wish you Godspeed for that. Do you know when it'll be out? Approximately this year?

Dr. Kat Toups:

That's a 50-million-dollar question but, yes, I hope. Parts of it are done, and it's all right here in my head. And so, I'm right now working on creating time and space in my life to write it so...

Kirkland Newman:

This year 2021.

Dr. Kat Toups:

Yes, it needs to come out in 2021.

Kirkland Newman:

Exactly.

Dr. Kat Toups:

Earlier rather than later. Because I keep adding more and more things to it as I learn new things constantly.

Kirkland Newman:

I know. You're one of these amazing lifelong learners. You're full of research and data, and you're such an inspiration, Kat. So thank you so, so much for being here. And I can't thank you enough, and we will be hearing a lot more from you. And when your book hits the shelves, I know you're going to be a huge hit, and you're going to change a lot of people's lives. So thank you for everything that you do, Kat, you really are amazing.

Dr. Kat Toups:

Well, I want to say right back at you, Ms. Kiki, all of the work that you're doing, taking your messages to the world and all that you've learned about functional medicine and the brain and trauma, and you're making such great inroads. And so I'm super excited and proud of what you do and watching all of that develop. It has been so exciting. So thank you for letting me be a part of your community. And yeah, so look for our research paper and, hopefully, we're going to finish the data analysis and get that submitted to a major journal in the next couple of months. So I think that will be big news when that comes out. I really can't wait to share the specifics of that with people.

Kirkland Newman:

Excellent. Anyway, Kat, thank you so, so much really. Thank you.

Dr. Kat Toups:

All right. Thank you, too, Kiki.

Kirkland Newman:

Thank you so much for listening to The MindHealth360 Show. I hope that we've helped you realize that mental health symptoms have root causes that can and need to be addressed in order to sustainably heal. And I've given you some ideas about steps you, your loved ones, or clients may take to start their healing journey. Please share this interview with anyone you think may find it helpful and don't forget to subscribe to keep up to date with our latest interviews on integrative mental health. If you want further information, please go to www.mindhealth360.com or find us on social media. This information is for educational purposes only and is not intended to diagnose or treat any disease or to replace medical advice. Please always consult your healthcare practitioner before discontinuing any medication or implementing any changes in your diet, lifestyle, or supplement program.

PART 4 OF 4 ENDS [01:58:54]