Inflammation is Friend and Enemy

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Hi Guys. Welcome. Thank you. Sorry for the technical stuff. This is totally weird. I made these slides for the German Academy of Integrative Medicine. I'm going to do this in Greece in, in May and, I wanted to share it with you because I got so excited when I made the slides.

It's the first time I've ever done anything this or looked at an inflammation like this. It's 110 slides long and so buckle up and it's being recorded so we can, we can watch more later. Okay. So the perspective this time is that inflammation is both your friend and your enemy. You, you have to have inflammation to live because inflammation is the immune system is the number one weapon. As a matter of fact, I think it's pretty much the only weapon. Inflammation helps heal wounds, right? Think about when you got to cut, it gets red and puffy after a day or two and then the redness goes away. You develop fibrosis and it heals inflammation, fights, infection. That's why the wound got red and puffy because the immune system was dumping inflammatory products to kill the bugs. Inflammation, fights, cancer, inflammation, fights, parasites. Inflammation keeps you alive.

If you don't have inflammation, you die. And at the very same time, there is a pretty good chance that whatever you die of will be inflammation. There's a pretty good chance that inflammation is what will kill you because every degenerative disease is associated with inflammation and asthma. CLPD, Uribel, crones, pancreatitis, ulcerative colitis, liver disease, rheumatoid arthritis, any kind of arthritis, dementia, heart disease, kidney disease, Vasculitis, cellulitis, sepsis. And um, uh, there was one other thing that just came in my head and then fell out of my head. But every degenerative disease associated with inflammation. So the real problem is balance, not enough inflammation and you die of infection, cancer or non-healing wound, too much inflammation and you dive degenerative or chronic disease. The solution is to reduce inflammation but not too much and not for too long. Locks and Cox inflammation are associated with all degenerative conditions.

Inflammatory cytokines are associated with neurodegenerative conditions and all autoimmune disease. So medicine, and even alternative medicine or integrative medicine has tools to deal with or reduce or control inflammation. Medication, anti-inflammatory drugs. We have stories and nonsteroidal anti-inflammatories biological drugs, the injectables, the immunologic drugs, we call them biological drugs to suppress the immune response. Even diet and supplements. When you look at curcumin or are you, you look at the products that we use naturally to regulate immune response there chemical ways of reducing inflammation. The tools that we have eye problems, they work too slowly and are given for too long and there are serious side effects and some medication has side effects that are lethal.

Some medication has side effects that are lethal. So Diet and supplements are good, but compliance is difficult. Diet and supplements or herbs may not be strong enough to reduce serious inflammation. So let's just look at steroids. Really. Steroid side effects, changes in behavior up to an including psychosis. Weight gain, increase in appetite, irritation of the stomach lining, including ulcers, perforation or bleeding, high blood pressure. And that increases the risk of stroke alteration and blood sugar level. Usually, it raises your blood sugar, which makes it a problem for diabetics and borderline diabetic. There's an effect on the growth and or thinning of bones. So there's an increased risk of avascular necrosis and osteoporosis, even if someone has only been put on steroids for a one, one course, one round. Um, and then infection risk with immunization.

So if you get immunized while you're on steroids, it's a bad idea because then you'll get whatever bug it is that is, you're getting immunized against INSEAD's stomach pain. Heartburn, stomach ulcers, bleeding, headaches, and dizziness ringing in the years because, and ceds or autotoxic, they are toxic to the little hair cells and your cochlea. Allergic reactions, wheezing, throat swelling, liver and kidney problems, and high blood pressure. But this tells you how this works. There are Cox one and Cox two inhibitors. So the Gi Mucosa is affected by insets. That's a Cox one blocker. That Cox one blog portion of let's say Advil Prostaglandin PGE two provides gastric per protection. There is a prostate gland in whose job it is to secrete in the Gastric Mucosa. Mucus bicarbonate into increase blood flow to the Mucosa. That's why Advil and steroids, Cox, any Cox one inhibitors cause peptic ulcers and GI bleeding.

Cox One and two and the kidney PGE one prostaglandin one and two, um, Vasos dilate the arterials in the kidney in glomerular filtration rate. And they also increase sodium and water excretion. So what happens when you give a

Cox one and two inhibitors, sodium and water retention, hypertension and, hemodynamic acute kidney injury, that just means you kill the blood supply to the kidneys. And it's irreversible. Actually, so are we? Okay. Okay. Cox One and Cox two cardiovascular effects Prostaglandin, PG, PGE, PDI two and Txa one thromboxane causes vasodilation and inhibits platelet aggregation. That's Cox to effect clocks, one plater that platelet aggregation and visa construction. So what happens when you give somebody, remember Celebrex, right? You know, when we talk about taking Advil for a headache as a little or spine pain, little bit of a problem and that, I can cause a stroke or mitochondria cardiac infarction by increasing bleeding.

Um, it's a thing. So the ideal anti-inflammatory, if we were going to void all those side effects but still get the job done, would reduce locks and Cox inflammation dramatically, quickly, temporarily to avoid the side effects. And they would stop in the normal range. It would also be nice that they were inexpensive, noninvasive, available easily and proved, or at least not disapproved. That takes us to frequency specific microcurrent and the frequency. 40 Hertz on channel eight and 116 hertz on Channel Bay in a blinded animal trial, they paint arachidonic acid on the mouse's ears and that increase increases Leipe oxygenase mediated inflammation. So they ran 40 and one 16, and that reduced the life. Oxygen has mediated inflammation by 62% in four minutes. And in every animal treated, all the animals responded and it's a four-minute time to response. So 50% of the responses there are two minutes.

The full response is there at four minutes. Um, the same frequency combination 40 in one 16 caused a 30% reduction and cops mediated inflammation and that was equivalent to injectable Toradol. Uh, when it was tested in the same animal model, all the animals responded. It's a four-minute timers, Bennett response, and it's tested against the placebo. So we know it really is the frequency. They tried other frequency combinations and nothing else worked. So just one 10th of a hurts to move the current, no reduction in swelling, four minutes of mineral deposit and bone, no reduction in swelling. And then even our frequencies for intermediate injury, um, no reduction in swelling. So locks and Cox is a good thing to block if you have any of these degenerative or inflammatory mediated conditions, but you don't want it to stay down too long. In humans. We know that it stays down for two to four hours.

So the biological medications inhibit TNF Alpha molecule directly. The biologicals are, um, immunotherapy. There are antibodies that they make specifically to the TNF Alpha molecule. So the biologicals caused mild side

effects including headaches, skin reactions, infections are fairly quickly. Respiratory tract, urinary tract infections. I'm serious. Adverse effects include allergic reactions, liver damage, cancer infections including tuberculosis, pneumonia staff and fungal infections. So the challenge with the medical profession is these TNF Alpha blockers called the biological drugs are so widely used and the side effects are really underestimated. I had a practitioner come as a patient is um, a medical physician from out of state. He came as a patient and he was taking Humira for low back pain to block the inflammation that was causing his low back pain. And that's just, and I said, what about the side effects? He said, oh, there are no side effects. Common side effects, upper respiratory and site, and effect, upper respiratory tract infections, serious infections, cancer, anaphylaxis, hepatitis B, multiple sclerosis, heart failure, liver failure, plastic edema, add Nemea.

Uh, you have to have 10. If off a factor, it's a year. And a monoclonal antibody specifically blocks TNF Alpha for up to three months. And then once that wears off and it'll work for three, six, nine, 12 months, every three months they give the injection and when it stops working, you have to switch to another one. So adrenal is the next one that's used in juvenile rheumatoid arthritis, psoriasis, psoriatic arthritis, rheumatoid arthritis, and potentially a variety of disorders that are mediated by what is called excess TNF alpha. The challenge with Enbrel is that there is a black box warning, a black box warning in the PDI, Pete in the, PDR is says that, this stuff will kill you. Be aware this product has fatal side effects. That's what a black box warning is. An embryo has one, serious infections, sepsis including fatalities have been reported with the use of Umbro, including tuberculosis, hepatitis B in other infections, hyper infection after use of Enbrel, Remicade and the, I have patients that are on these products.

The good news is that they can walk, they've got really bad rheumatoid arthritis and they won't take them. Um, hepatitis B Burkey locis t cell lymphoma, drug-induced Lupus, d myelinating central nervous system disorders like ms ALS, psoriasis, um, the Lygo Leukopenia neutropenia and thrombocytopenia and fatal Pancytopenia have been reported. So pancytopenia means that pretty much your bone marrow stops working, I'm pretty sure that's what that means. Increased of lymphoma and other cancers. So it treats autoimmune diseases. That's the good news. All sort of colitis. All of these autoimmune diseases can kill you on the other hand. So can the drug. So the ideal anti-inflammatory would reduce TNF Alpha and the other side of kinds dramatically, quickly, temporarily, and keep TNF Alpha in the normal range. It would be nice, it was inexpensive. Noninvasive nonlethal

would be good, available and approved. And we know from research done in 2000 2001 that frequency specific microcurrent has been observed, observed to reduce all inflammatory cytokines, including TNF Alpha.

Now the study was on fibromyalgia patients. Blood sample data was only done on a subset of six patients for the paper that was published, but I have data on 13 patients. So seven of them were not published. There was only one frequency combination that was affected that was 40 hertz on channel eight, 10 Hertz on channel be to reduce inflammation in the spinal cord because that's what these patients had that was causing their body pain, was inflammation in the spinal cord. So as you know, 58% of them recovered doing various therapy. But the take-home message for our purposes is that the frequency 40 hertz on channel eight and 10 Hertz on channel beat was the only one that reduced the pain and reduced interleukin one which is an inflammatory cytokine associated with all neurodegenerative conditions in neuropathic pain, um, by a factor of what is that 20 times in the index patient.

And um, the p-value add two 0.0040001 just linear regression on time points. And the important part is to look at the normal range. The normal range for interleukin one is toward between zero and 25 frequency therapy took and others can one down to 21. It's stopped in the normal range. TNF Alpha, the normal range for Tnf Alpha is zero to 25. The frequency to reduce inflammation in the spinal cord. Took TNF Alpha down by 15 times from 300 down to 20 and it stopped in the normal range. Now, look at the second visit. I think the second visit was about four days later and after four days the inflammation came back up not as high as it was before. Right? So it goes down to about, this has 78 but goes down, oh plus or minus 35 it goes down to let's say about 2025 and then it comes back up, but it's not as high as it was when it started and the treated again, it drops back down and the third treatment it came up and didn't go as high as it was the time before.

So it goes down dramatically, comes back up at a reduced rate, goes back down, dramatically, comes back up, and every time it stops in the normal range, that is like your ideal TNF Alpha blocker. This is a trial because the person, what we were doing, so 0.002 that Piu has interleukin six same story goes down dramatically. No scatter except for this lady who's, that's another conversation but goes to back down dramatically, quickly, stops in the normal range, comes back up at a reduced rate and four days later comes back, goes back down, and then it comes back up at a reduced rate. Substance P went down and substance P is made in the spinal cord. So the data shows that it actually changes the spinal cord and as production of substance P endorphins goes up. And that's not the conversation we're having, but it's kind of a nice

side effect to have the patients, get sort of floating in and a little stoned cortisol goes up.

It's not a stress response because of cortisol follows the endorphins and neuropeptide y which follows the sympathetics drop. So cortisol goes up, but it lags behind the endorphins and the endorphins in order to go up, have to steel. In order for endorphins to go up, act h has to go up. And when you get ActX up that that brings cortisol up. Um, it could be that the increase in cortisol has something to do with why the decrease in cytokines was so dramatic. Then, of course, their pain went down from a 7.3 to 1.3 all patients experienced relief and 58% of them experienced resolution of fibromyalgia within formats. So basically for most of us, this is your most difficult and the perplexing full body pain patient and she recovered. So it's important to remember that only 40 Hertz on channel eight and 10 Hertz on channel B 40 Hertz is reduced inflammation. 10 Hertz reduced inflammation in the spinal cord specifically and reduced substance p but it reduced pain and all of the inflammatory cytokines by factors of 10 and 20 times and then allowed them to come back up within a few days. So you're dropping it dramatically, letting it come back up and it stops in the normal range.

So the challenge we have in interpreting this data is that in medicine, inflammatory cytokines are hard to change and when they change, they change slowly over months. So 40 words reduced on inflammatory Cytokines by 10 to 20 times in 90 minutes and then they returned at a much-reduced level. How did that happen? And it's actually a question that we puzzled over for about 15 years from 2000 to about 2000 actually 17 years. We didn't really come up with the cell signaling model for FSM till a few years ago. So how the frequency changes it is we think these receptors on cells respond to external factors like bleeding, bacteria, tissue fragments, those activate kinases that change transcription factors and that changes genetic expression.

These receptors out here respond to the external environment and that changes kinases, it changes genetic transcription factors in the gene, um, RNA messenger RNA and micro RNA. And that causes the immune system, the cells to create proinflammatory cytokines and create inflammation. So drugs and nutrients act like he's in a lock to change membrane receptors and change intracellular function, right? Frequencies act like the key remote that changed the lock with an electromagnetic signal. The frequencies appear to change membrane protein configuration and cell function electromagnetically. So the cytokines are created by changes in cell signaling, interleukin one six TNF Alpha, interferon gamma, and CGRP, which wasn't a published piece of data, but it's a really powerful inflammatory cytokine. So it is our proposition

that only changes in cell signaling could normalize them so quickly and have them stop in the normal range. So if you changing how the cell works as a way of reducing inflammation, this is what we want to do.

The biologicals have the problem because they directly block or, or cling to inactivate specifically the TNF Alpha because they made a monoclonal antibody to TNF alpha, so known proposed changes in cell signaling, normalize the internal cellular genetics and allow the inflammation to drop a stop in the normal range. So the real problem with inflammation is balance; not enough inflammation and not enough inflammation. And you die of infection, cancer and non-healing wounds, too much inflammation and you die from degenerative or chronic disease. The best solution is to reduce inflammation and to fix what's causing it. Right? You change cell signaling, but you have to think about what's causing it. Why is the sell a little bit overreactive?

So think about the process this way. So infection and tissue injury, bacteria and viruses, cell debris turn on inflammation, right? Affect the toll like receptors on the macrophages that makes them create cytokines and inflammation. And when the infection is better and the injury is healed, then you go back to health. If the infection doesn't get better or if the inflammation doesn't go back down, you end up with rheumatoid arthritis, out throwed, sclerosis, inflammatory bowel diseases, certain cancers. If the inflammation doesn't go back down after the infection and the tissue injury heals, you end up just sick. Swelling, loss of function, pain, Anorexia, fatigue, shot, fever. You just feel crummy when your cytokines are up. So how does that work? Well, the genes managed tissue repaired daily, right? Tissue injury changes, genetic expression. So the normal genetics of, let's just say a tennis site, because we know that FSM can heal tendinopathies and partial thickness tendon tears.

So the normal genetics of the Cha Tenocyte. So here's the Tenocyte. Manage daily turnover and repair of Collagen, Collagen type one synthesis, and degradation. And the tennis side, this is what it looks like. I'm not going to go into it in detail, but it gives you an idea. Mechanical loading of tendons, connected tissue and ligaments stimulates growth factor in the Tenocyte, right? And rebuilds the tendon, ligament, connective tissue as needed. That's why exercise and weight-bearing exercise is good for tissue repair. You want to use it but not use it so much you're braking. So that's how the genes managed to this repair. All right? But when the tissue is injured, the T cells turn on the genes that make cytokines and substance P when the tenicides. So body senses and injury that cannot be repaired with normal repair,

strategies. And in a normal period of time, the cell turns on the genes to express CGRP, substance P and glutamate.

So Tenocyte tendinitis is not associated with the immune system. Activation tends to nine is the pain in your tendon. When you strain your Achilles doing whatever you did to it. Tendinitis is not an autoimmune condition. The inflammation doesn't come from immune system activity. It comes from the cellular genetic response to injury, the brain, the body, once you to hurt. So you don't use that tendon. So it can go back and try and fix the thing. As long as the Tandon stays injured, inflammation is going to stay up. So the trick is going to be to repair the tendon. If you want to get these genes that turn on CGRP, substance P and glutamate, you want to fix the tendance so those cells will go off. What we found out was only the frequencies for tendon injury, reduced inflammation repaired the tendon. I tried for 11 months to reduce inflammation in the tendons and didn't work. See this, that Kelly's tendinopathy tendonitis that is was diagnosed as Achilles tendonitis. This is the injured tendons. This is the healthy tenden. In order to reduce the pain and tendon inflammation, the only thing that worked were the frequencies to repair the tendon. That's what we had to use treatment for two hours. And then we're talking 11 months of ineffective treatment to reduce inflammation and two hours with the frequency to correct the tear in the tendon. Illimited limited a eliminated the pain permanently.

Okay, so this is how we set it up from the need of the foot tells above and below the injury. So in our world when using frequency specific microcurrent treat the cause by repairing the tendon and you repair the tendon by changing cell signaling and in treating the fact that the tendon has a tear changes the pattern by repairing the tendon to reduce the inflammation. Reducing inflammation by itself didn't work. You had to change the cause by repairing the tendon. And then, of course, support the stable state with, east centric, contractions of the muscle. A little bit of tape, a little proper PT, but it was one, two-hour treatment after a year and it was done. Genes turned on by injury. Determine the rate of healing. Healing is determined by the genes that cause the cell to express or create inflammation right after an injury.

While we know from FSM that genes turned on by the injury can be modified by treating the frequencies, treating with the frequencies to reduce bleeding, treat the trauma, treat the torn and broken, treat the injury in the tissue and the frequencies obviously change genes and speed healing. If the treatment begins within four hours of the time of the injury. Facelift. Patients do not look like this at 11 days. Even with makeup, that's just not possible. We do have a blinded trial showing that the frequencies to stop leading, treat the tears in the

blood, supply, the fashion and the tendon, reduce inflammation, reduce inflammation in the immune system, the blood supply, the fashion, the attendance, and these were hamstring, delayed onset muscle soreness and that support vitality. And we found out, that the frequencies actually make a difference was a controlled trial and the patients treated with plain microcurrent just three-tenths of a Hertz and Ellen study in 1999, was equivalent.

The microcurrent treatment was equivalent to sham and was not effective. So what the FSM, the treated leg was, pain level was a 1.3 at 24 hours of 5.2. And the sham like treated leg was a 1.2 at 48 hours. Sham late was seven, a seven out of 10 in 72 hours. The treat of like was less than a one. [inaudible] was a, for the p-value has three zeroes at all time. Measures with only 20 patients as an end. These are extraordinary statistics and recommend and um, represent a huge change in, um, findings. And the problem is, or the good news is for us that there is no other effective treatment for doms delayed onset muscle soreness. So infection and injury turn on inflammation. We just saw that real question is why does inflammation persist after the infection has gone and the injury is repaired? So let's say your patient had the flu or a strep infection, at the age of 20, and at the age of 22, they show up with rheumatoid arthritis. , the patient had a sprain or a strain and a year later they still have not resolving pain and inflammation or an autoimmune condition. Why is that? Why does it persist after the infection has gone and injury is repaired?

Well, the neurology of it is that the neuroimmunology of it is that the Vegas nerve suppresses inflammation. Naturally. When the infection has gone and the injury is healed, how does that work? Vagal afferents notified the brain that infection and trauma has happened. So there were signals, signals that go up to the brain by way of the Vegas from the periphery and the midbrain. Stress Centers are notified. There's infection, there's trauma, we're under threat here. They suppress the Vegas during stress, injury, infection and threat, which makes perfect sense. Then signals from the airfare, Vegas and information to the brain about infection in tissue injury. That's kind of redundant, Huh? Okay. So pathogen associated pants and damps damage-associated molecular patterns, trauma, travel up the Pheasant Vegas notify the brain that there's a problem. The brain sends stimulus via the efferent Vegas, the exiting Vegas between the brain and the immune system down to the CELIAC ganglion and for the CELIAC ganglion to the t cells in the spleen, which in turns signal to the spleen macrophages that um, they should reduce cytokine production by those macrophages when the Vegas is on an increased side of kind production by the macrophages.

When the Vegas is off during stress, you need to flip that around. So short version, the Vegas gets in the way of survival during stress. If the Vegas stays on, your immune system stays quiet, your digestive system keeps working and everything's fine. Well, if you're being attacked by a tiger, it's not funny. So the Vegas slows the heart rate, increases digestion and suppresses the immune system. So the Vegas is inhibited by the stats. Central Stress Response Centers. The heart rate can go up, digestive system can be turned off, and the immune system can be very active. Creating inflammation to fight the infection, cause fibrosis and repair the tissue. But when the infection has gone and the traumas repaired, why did the stress center stay on? Why does the Vegas stay off? Well, in a normal patient, once the infection has gone, the traumas repaired and the injuries heal, right?

It's all good. They ate. Parent reg is, tells the brain that it's all good. All is well down here. No problem. Stop sending stress or inflammation to the brain. The primitive stress centers calmed down and at the Vegas come back on vagal stimulation normalizes the heart rate slows down again. Digestion appetite, stomach acid, Paracelsus sphincter in esophageal function all returned to normal. The immune system is down-regulated by the Vegas efferent fibers and inflammation and macrophage activity return to the normal quiet state. That's if the tiger is asleep. However, why did the stress centers take on? Why does this Vegas state off? What is that? Why does that happen? That takes us to the topic of central sensitization. The firing threshold for these midbrain stress centers is set at conception in Utero, in early childhood, and then they are modified during life. So there are firing thresholds for pretty much every cell in the brain that is organized by input from everywhere, from every other cell in the brain, from the immune system, from the endocrine system.

They all get to vote in as to whether or not this particular brings cell or area of the brain fires. So how is the firing threshold for the stress centers and stressors were talking about the Migdalon the hippocampus? So at conception, what they found out in a study, we looked at this at a fibromyalgia conferences had to be 2000 2001 children conceived, by way of implanted blastocyst with frozen embryos, blastocysts embryos, 32 cells big, have higher blood pressure at age seven compared with controls that are conceived normally there wasn't even any overlap. The blood pressure was completely higher in the blastocyst. The frozen embryo children compared to the children conceived. Normally maternal stress during pregnancy lowers the firing threshold. The stress centers fire earlier with less external objective threat. So if mom is in an abusive relationship, um, if mom has given steroids or, um, um, to fight infection, fight inflammation, if mom has given amphetamines so

she doesn't gain weight, um, if mom is living in a war zone, that infant will be born with a more active immune system, a lower threshold, and the stress centers in the brain and a lower vagal tone.

Early Childhood Trauma, sexual abuse, physical abuse, surgery, accidents, trial. We'll lower the firing threshold, activating the stress centers with very little objective, external threat. So when you're talking to a patient with persistent inflammation and persistent immune activation, ask about their childhood. Did you have any surgeries of physical abuse, sexual abuse, accidents or trauma before the age of seven? At the age of seven, things change and the thresholds are a little harder to modulate or modify. Um, but before the age of seven, that's a deal. So well, yeah, I had this gut bowel surgery when I was two, but I, I was fine. I was over the midbrain, never forgets that threshold is set. Adult Trauma, pain, rape, abuse, PTSD, kidnapping, and assault, all lower the firing threshold for years or possibly permanently. The good news for us as we can modify the central stress response, but it's important to recognize that you need to ask about it because this is why some of your patients have ongoing inflammation.

So what does central sensitization mean? It means that the stress centers state on even when the threat is gone, when the infection is gone, when the trauma is wound, is healed. The stress centers in the brain, the Amygdala, the hippocampus, all of the stress centers in the central part of the brain are said to be sensitized when they fire with very little external stressor. A threat. Why is that? Why would the brain do that? Why would your neuroendocrine-immune system do that? The midbrain remembers hippocampus, remembers and puts an unconscious, subconscious or rarely conscious memory from early childhood, past injury, painful or stressful events so you can predict and survive the future. The patient is unlikely to be aware of this. Sensitization, sensitization, or any of these memories. They don't remember the surgery they had when they were four. They really don't remember the fact that their big brother raped or molested them when they were five or six.

It's not unconscious. Sometimes the brain actually buries it, so you can't remember it. But the visual stimuli, what you see, what you hear, what you smell, even textures or furniture configurations. So the patient walks into a room and there's stomach tightens up. They don't know why it doesn't bother them. They notice it, think it's just something weird. Or they get in an elevator and they smell a certain kind of average aftershave that can trigger the midbrain and set off a stress response reaction with no conscious memory of why it's happening or even that it's happening. Stress Hinders go up. They don't remember that their rapist wore that kind of Cologne that's not in

conscious memory. It's in the hippocampus. It remembers stress centers go up, the Vegas goes off. All the patient knows is the next day they're constipated and the digestion is off and the reflux is a little bit worse and they're not really sure why.

Those are the patients that tell you, it comes and goes. It's not tied to anything. Hmm. Makes you think. Right. So the challenge that we have is that there's a stream response to all stressors. The stressors in the brain, the endocrine and the nervous system react to all stress and more or less the same way, suppress the Vegas in order to increase the heart rate. Suppressed digestion. You don't need to digest your food today. Uh, we'll digest food tomorrow if there is a tomorrow. Right now there's this tiger thing happening and we need to increase inflammation because we have to heal this tiger bite and the tiger spit has lots of germs in it. In a sensitized patient, the midbrain stress centers have a different end, lower threshold. They fire with much less external objective stress, the stress in her state on eval from normal life stresses and events and keep the Vegas off or reduced.

When the Vegas is off, the immune system remains unregulated and creates allergies, autoimmune conditions, and chronic inflammatory reactions. The digestive system changes, create leaky gut and further activate the immune system. What happens if your stomach produces less acid? The pancreas, less enzymes and gastric parasitosis is altered. Well, your biome changes, the bacteria that make butyrate that repairs the gut wall, the bacteria that make the products, the short chain fatty acids that repair the gut wall, those bacteria have to live in an acid environment. If the stomach acid is turned down and the pancreas still produces by bicarb, but the stomach acid doesn't produce so much acid, it gets more alkaline. Acid-loving bacteria don't thrive in that environment. And your got doesn't repair itself. The stress response works really well for short bursts. It's pathogenic when it's prolonged, so the Vegas really is the key to inflammatory balance, but how do you treat the Vegas quickly and safely?

There are Vega nerve stimulators, but they're very invasive. They got side effects and to some extent, they're dangerous just because the installation is so invasive. How do you reduce sensitization by changing cell signaling, restore the Vegas balance inflammation by changing cell signaling and support the stable state? How do you take the sensitized patient and put the tiger to sleep? Have the Tiger Asleep in the driveway? How could you modify the Vegas with frequencies in microfinance? We know they're available nerve stimulators, but what if you could modify the Vegas without surgery without an implanted device? What if you could do that?

Well, we need to demonstrate that the frequencies that modify inflammation, substance p Beta-endorphins will also treat the brain. While we've treated concussion, traumatic brain injuries with FSM and therapy in a two week period, the changes in Ekg EEG findings are relatively huge and the changes in patient performance in this traumatic brain injury, when combined with the brain training program, um, were dramatic. And for sure if the frequencies can reconnect the brain after a stroke, then it appears possible for frequencies to increase secretions in the Vegas. So we know from human data that only the frequency to increase secretion specifically in the over three increase salivary estrogen using the frequency increased secretions and other tissues had no effect on salivary up estrogen-only treating the ovary. So channel B, the other tissue, the other frequency has to be correct. Well, stroke patients or spastic because they lose.

So Kristin, for Motor Cortex, right? So if you have a stroke in the sensory-motor cortex gets spastic paralysis on side, opposite from the stroke. This is a 38-year-old patient. Three years after the stroke she had spastic paralysis and the upper extremity, lower extremity flaccid paralysis, right side, it's sensory anesthesia down the whole side. If you could increase secretions from the sensory and motor Cortex, it would relax spasticity and improve sensation. And in point of fact, that is exactly what happened. Um, increasing secretions in the sensory motor cortex, only 81 hertz, which is to increase secretions. And 92 hertz in the sensory-motor cortex produced the change in spasticity. I honestly didn't expect it to work. After 20 to 30 minutes, her hand and arm started to relax. After 60 minutes, the hand remain relaxed and the arm and shoulder relax for passive movement.

After 90 minutes she was able to actively move the arm and shoulder and the sensation was normal for soft touch, proprioception and sharp. Typically it is easier to change sensory, um, problems than it is to change motor. And the patient said the glove is warm. So this was the end. This is the beginning. Her arm and shoulder were spastic and glued to our body. This is a physical therapist working to mobilize the shoulder. Slowly when she moves the shoulder, the hand still become spastic, but not the wrist, which was interesting. And then at day five, she still had the same movement that she had when she left on the first day. So five days later it maintains. We ran 81 on a and 92 on B increased secretions in the motor cortex that relax the hand spasticity again, relax the shoulder muscles and further increased active shoulder range of motion.

And these improvements were maintained after five months. They were permanent in a 38-year-old. This is a lot easier. It's not universal when the

stroke is more chronic in an older patient, a 38-year-old still has lots of growth hormone in the stroke was when she was 35. It was caused by sleep apnea. So three, five-year-olds still has lots of nerve growth factor and growth hormone in a 75-year-old. It is not this dramatic and doesn't work well, but especially it's not permanent. So this is, this was a pretty dramatic outcome and a good demonstration that you could increase secretions in specific parts of the brain, right? So the frequencies modify autonomic function quickly and, uh, quickly and, and temporarily. Wait, I lost my cursor. There it is. this is Roger Belica study from 2013.

He tested heart rate variability and uh, found that if you, it started out with the parasympathetics higher, um, and then he increased secretions in the sympathetics. So this is 81 and five. 62 increased secretions in the sympathetics. Run up for one minute, wait for two minutes and then retest. And this is what happened since the sympathetics dramatically increased and they drove, drove the parasympathetics and the ground. Then, two minutes later you test. You have this balance here on the left. You do a one minute on each frequency to increase secretions and vitality in the parasympathetics. Treat them one minute each, wait for two minutes to the, for the frequency to wash out and then retest. And the parasympathetics are now higher than the sympathetics. The autonomics respond really well to increasing secretions in whatever system is being treated. So you know what that means.

It means for us would have a Sam that you need to be aware when you run increased secretions, what's going to happen when you do that? Because it's very likely to work. So I put in the crps and pots case, so complex regional pain syndrome and, postural orthostatic Tachycardia Syndrome. It's an autonomic disorder. This is a case report that we did last November in Florida. Um, she had full body visceral pain. I'm not going to go into the case and a lot of details. She was 19 years old. She had a viral infection at the age of six. Complaints of stomach pain after that. Got pain day daily gastro-paresis with vomiting at the age of 11. So in seven years for gastro-paresis progressed, they put in a feeding port and the feeding tube leaked and created abdominal adhesions. She would be diagnosed with paths a year later at 12 or 13 and then they did blood draws at the age of 16.

So three years after that and caused immediate sharp arm pain and full body pain and Alinea persistent to the present time. She was 19. She had full body pain, abdominal pain, Alinea full body, full body skin hyperesthesia even up on her face, which means that it's central, it's coming from the sensory centers. And the cranial nerves. Pain with soft touch everywhere, pain with eating, very slow digestion, constipation, reflux, gastro-paresis obviously abdominal pain,

severe pain with urination, defecation and gut ruminant. And here's, here's a piece of data to keep an eye on. Her heart rate was 90 at rest. Okay, so we treated the ELA Denita with the frequency to quiet the activity of that midbrain, the part of the stress centers. So there's the Amygdala and the hippocampus and the limbic system. Quiet the stress centers in the midbrain. Then treat the Vegas. Remember the viral infection she had when she was six.

So this is a frequency to remove the effects of the virus. Treat the Vegas to remove the fact of trauma, treat the Vegas for scarring in the abdomen. And then it increased by vitality in the Vegas. I was too nervous with the pots to run increased secretions in the Vegas and then treat the Vagal, the outflow of the Vegas in the muddler, quiet those, the dorsal and ventral vagal nuclei that are in the Mandela, and then treat them for trauma. So you can address all pieces of this by quieting the Midbrain, put the Tiber to sleep, treat the Vegas directly to turn it back on and then quiet where the vagus nuclei are in the midbrain. Gentlemen population manual melting of the Vegas and the abdominal adhesions created great relief in her abdomen and um, the abdominal pain and the pain with urination. Did you know that the Vegas has pain fibers?

I didn't know that before this night treating this girl, this is one of the doctors that took the class before we treated this girl. I didn't know the Vegas had pain fibers, so we looked it up, found out it had pain fibers, and then the complex regional pain syndrome made sense. It was a d effort and intonation or denervation problem in the Vegas. So after two hours or pain was a zero, the pots was gone. She got up off the table and had no pots. The allodynia was gone. That sensation was normal. Your nation was paying free and her heart rate went from 90. Remember the heart rate, heart rate went from 90 to 67. And as far as I know, she remains pain-free to this day. I haven't heard back otherwise. So this presentation is for medical physicians who are not familiar with frequency specific microcurrent treatment paradigm that can reduce inflammation and restore balance.

So why is it they haven't heard of it? Well, because the frequency specific therapies, in general, were developed in the early 19 hundreds by mostly MDs and osteopaths and the US, UK, Germany, a noose by thousands of physicians until 1934 medicine of course label them all as ineffective fakes, especially around 1917 1920 his drugs and the pharmaceutical companies were becoming more powerful drugs and more effective drugs and surgery. We're going to be the tools, medicine, nutrition, herbs on the apathy were outlawed and electrical frequency therapies were outlawed. Any physician who use these tools would lose his license. The devices went into the back

rooms. The research in history were lost in the practitioners were persecuted, some of them even went to jail. So if you look up frequency therapies from the 1920s but you'll find out that they were quacks that was fraudulent, but maybe not so much.

Harry van Gelder was an osteopath in nature path from England who bought a practice in 1946 that came with the machine that was made in 1922 and that machine came with a list of frequencies. George Douglas worked with Van Gelder in 1983 and brought home a copy of that list. The list was resurrected in 1995 and used with a two channel microcurrent device. I still don't know how the frequencies were derived. I don't more uncertain of the mechanism of action, but we have a pretty good idea at this point. Um, and I can tell you that the 1920s equipment was not microcurrent. So there's a list of some of the frequencies they were first used in 1995 taught in 1997. Um, the benefits are consistent and the effects are reproducible and teachable, which is the most important part and research in animals and humans and clinical results have accumulated over the next 20 years.

The clinical responses, very frequency specific inflammation reduces pain and swelling and redness. Then change range of motion fibrosis and skyline dissolve, scar increases. Range of motion doesn't change pain or redness. It's very specific. Hemorrhage stops bleeding and pain in the Menzies prevents bruising and new injuries, bruising and chronic inflammation reduces blue losing dissolves cords but doesn't change acute inflammation. And then there's this frequency for kidney stone pain that's effective in every case, but it's not useful for anything else. The current by itself increases ATP production by 500% in three different studies, not chain in 1982 cigarettes in 2001 2002, uh, as long as the current is below 500 micrograms, it would increase ATP production by five times or 500%. 20 days of microcurrent increased both vascularity, Collagen, both increased vascularity, Collagen and Elastin. Elastin improves the flexibility and repair Tissue College and improves the strength of the repair of tissue vascularity proves the health of the repair of tissue.

So here's interesting. Remember when we were talking about treating the cause? While frequencies treat neuropathic pain. We know that nerve pain is the easiest thing we treat. It's nerve pain is inflammatory. So this was just an n of 20, but it's uh, average chronicity was almost seven years pain and the first treatment one from a 7.0 6.8 down to 1.8, that p-value has two Zeros, even with an n of only 20 pain was reduced in the second treatment came back but never as high. So the inflammation comes back but never goes as high as it was to start with. Went from a 4.82 less than a one that p-value has two zeros, 65% fully recovered. However, when you reduce inflammation in a

patient with shingles, it'll make the pain worse. Shingles and the uptown like branch of five, and an 85 year old men, when we ran the frequency to reduce inflammation, it increased the pain.

And then there was only one effective frequency. Two 30 and four 30 or two 36 and four 35 reduced the pain of the shingles. And that's because those frequencies we think disassemble the virus. So this patient had, four hours of treatment. It was pain-free in one hour. The pain didn't return and lesions were gone and four hours and 24 hours. The frequency acts as if it changes the membrane configuration and cell function. Electromagnetically. It acts as if it disassembles a viral capsid. Just the same way that a singer's note will blow up a lead crystal glass. So you have to treat the cause being specific, treat the inflammation or the virus by changing cell signaling. Change the pattern, reduced the pain. How does that happen with just frequencies and microcurrent? Well, the human body is a quantum biological system. Living tissue is biochemicals, molecules, atoms, subatomic particles, all held together by electromagnetic bonds, right? That's how your body works. Every bond has a frequency at which it resonates. Every mechanical and chemical bond has a frequency at which it was Nate's. So keep that in mind as we look at the physics as we go forward, every bond has a frequency at which it resonates.

Cells are filled with a gel matrix, matrix and water lines. This gel inside cells and form structures that act as a semiconductor. This Gel Matrix has water molecules attached to it and flickering, and in that flicker there's a whole created and the outside shell of the water that acts like a silicon or Germanium crystal embody is an electromagnetic system that looks solid, but cells function as a semiconductor network conveying current charge and information. Okay, so when we say that every electrical chemical and mechanical bond has a frequency at which it resonates, what is resonance? What's resonance? It's the tendency of a system or a bond. Oscillate at large amplitude is in response to some frequencies, but not others. At the resonant frequency, very small forces can produce very large amplitude vibrations. Soldiers marching in step can collapse a bridge if they started vibration going that matches the resonant frequency of the bridge.

They found this out, I think in the 17 or 18 hundreds so resonance also explains the frequency effects, let's say on the virus or even on cell signaling. There's a precise frequency that holds let atoms together in this crystal Matrix. The reason this trick works is the singer can't create the frequent, the note that matches the frequency that holds led atoms together in this lead crystal Matrix. This trick doesn't work with glass. It only works with led and the led

crystals simply comes apart when the lead Adams vibrate with the note and stop holding each other together. The lead crystal comes apart, so we think that drugs are nutrients act like keys in the law to change membrane receptors and change intracellular function.

Biologic resonance is this. The frequencies act like your key remote opening. This lock with an electromagnetic single signal frequencies appear to change membrane protein configuration and cell function electromagnetically with a specific frequency signal. Good achieve lasting effects. You have to change the stable state of the tissue so the correct frequencies we found create instantaneous changes. They change the state of the tissue and those changes can be permanent. When the patient's metabolism attitude and mechanics support the change in state waters completely stable. As I said, as long as the surrounding male you is zero degrees centigrade, it's completely stable as a liquid, as long as the surrounding mill you is between one and 99 degrees centigrade, increase energy in the system and it's completely stable as steam, as long as the surrounding the EU is a hundred degrees centigrade, so you create a stable state with integrated medical strategies.

All of you listening to this Webinar do very that very thing in your practice. You're going to treat infections with antibiotics or ivs strategies or herbs or supplements. You're going to repair trauma with FSM or hyperbaric oxygen or stem cells or prolotherapy or taping our tincture of time, and then you're going to support mental calm and stress reduction was supplements with meditation or even medication if that's required. So the stable state is what you are already doing in your practice. What FSM allows you to do is to change the state of the tissue in real time, quickly, dramatically, and allow it to stop in the normal range. What FSM can't do, can't fix everything and everybody, it's not a panacea, it's just biophysics. It can't treat what you don't think about it. We'll treat exactly and only what you choose. If the problem is not inflammation and you only treat inflammation, it's not going to work.

I thought Achilles tendinitis was an itis. I thought it was inflammatory and I only treated inflammation for 11 months. It didn't work. The only way to treat it, to repair the problem was to treat what was wrong and that was to treat the tendon for the tear, for the trauma repair, the trauma that change, the genetic expression that made the inflammation go away and it repaired the tendon. The other thing it can do is it can't put tissue back that's not there. So I could treat the Achilles tendon because it was a partial thickness tear. I could treat the ACL as long as it's a partial thickness tear. So a torn ACL, a completely torn ACL as a torn ACL, but a partial thickness rotator cuff tear can be repaired.

What FSM won't do. We don't treat cancer. There's one studies showing that if a patient has cancer that you don't suspect it's not going to make it worse. I invite you to read Arlene Lennox is paper and the general radiation oncology from 2000. Um, and I think that's on the website. Is that on the website? Lennox paper? It's sort of ancillary. It's the cancer one cancer scar tissue. Kevin's going to check it. There's obviously a medical and ethical reason to have enough information or studies or experienced and know if it's safe and effective. If I do something silly inadvertent and it makes your pain wrong, let's just pain that pain makes your pain worse. That's just pain. If I do something through an experience or just bad choice to make your cancer worse, you might not have time to get back on top of it.

Obviously, in the U.S. there's a political reason, uh, the best way to get any treatment method shutdown by the regulatory authorities is to use it or advertise it as treating cancer. But you can treat the nervous system, the adrenals, the immune system, emotional factors away from the tumor site to treat the patient, not the cancer. So this is what we do with inflammation. You have the ability to treat the cause by changing cells, signaling, treat, torn and broken, treat the virus, treat the costs, change the pattern of signaling in the cell and then support the stable state with what you already do. Diet, supplements, and exercise. But you start from a different place because the pattern is different, the cell is different. And so diet supplements and exercise can be much more effective because you start from a different place. Now mind you, this is a lecture that's aimed at people who have not taken our seen FSM before.

So frequency specific microcurrent is safe, effective, teachable and the results are reproducible. And I swear that is the most important thing to me is what has gone before is not nearly as important as what you will do with it because it is teachable. And what we do is reproducible frequency, specific microcurrent to this group of integrative medical physicians from Germany. A new solution for balance and inflammation and immune response. I like this line. If you thought the old solutions were enough, you wouldn't be here. And when the old solutions aren't enough, try a new solution, which is what you guys are doing. So it wasn't exactly aimed at a Webinar, but I think it's a review of a little bit of what we did at the advanced. And, for those of you that are that, we'll go back and look up what we did at the advanced and review what I'm treating the Vegas is about and how you do that, how you add the biggest to what you do for Cbo and gastroparesis, irritable bowel, just almost everything.

But you have to make sure that the trauma is repaired, the infection has gone before you turn on the Vegas, cause you can manhandle it, you can shut down the med brain centers, stress centers, you can turn back on the Vegas probably won't last, but you need to make sure that it's okay to do that. So you're using the new solution. Let's see. I think that's about us. Two questions. All right. Well, no, the agent, one of the night, he was positive or negative. It was all polarized positive from neck to feet. Same thing with the Vegas. When we treated the Vegas, it's polarized positive. Um, the nervous system loves to be polarized, especially from the brain towards the extremities. The same way that we do 40 and 10 polarize positive. If the patient doesn't tolerate polarized positive because they've got spinal stenosis or a lot of scar tissue in the spinal cord of the Dura, you can run an alternating, it just works faster when it's polarized.

Positive. Other question over the other person at times and frequency, positive, fuller treatment times are as long as you need it to be theirs. I don't think it's a great idea to attempt treating the brain, the Vegas. There's a lot of this stuff that you have to do with the precision care and you just, you have to be able to manipulate the frequencies and respond to what the patient's responses. So if you do x and the patient's responses, discomfort or not fun, you need to be able to figure it out in real time and change the frequencies you're running. So when you are treating the midbrain that Vegas, um, at least for the first time, second time on patients in the office, I would, I would, have a manual unit available. That being said, I added the quiet, the midbrain centers, quiet them, Adela and increased vagal tone to my concussion protocol. And I run that at night probably two or three times a week. So life is pretty stressful and I just need my biggest to just keep parking white along and keep things under control. Um, keep my digestive system functioning. So that's what I do with that.

It's all good. Yep. Okie dokie. Thanks guys. We'll see you next month. U, well probably not actually because I'm going to be back in Germany, going to Greece and then Germany will try and schedule one of these in June. If you have a chance to come by, one of the core seminars someplace in the country, try and do a repeat course seminar. Remember there are videotapes of the symposium that are coming out sometime in the next month or two audio tapes to the symposium and we're doing a course seminar this weekend starting Thursday, in Portland. And so we'll be videotaping that and there's actually a fifth day, so those of you who've taken the core in the last three years, remember that Sunday afternoon you're all kind of branded

anyway and I just sort of blow through the visceral material and about two hours instead of six.

Well, we're going to take Monday, this time in Portland and videotape this row section with all the stories and all the stable state stuff and all the detail that we don't have time to do at the core that you had taken. So you are welcome to come to Portland for free on Monday, whatever that date is, 28 something next Monday. And um, sit in on the, on the core visceral section. And, um, yeah. Also it available and we'll have that available on video. So it will be happy to send that out as a separate, as a separate, um, day. I think that's it. Thanks a bunch and we'll talk to you in June. Do good things.