

Interview with Peter Staats, MD, Physician, MBA

Interview by Sheldon Baker

Integrative Medicine: A Clinician's Journal (IMCJ): Is it correct to call you the pain doctor?

Peter Staats, MD: I am the pain doctor. My wife calls me the king of pain and I hope she means that in a nice way.

IMCJ: I'm certain she does. How long have you been married?

Dr. Staats: We've married almost 33 years.

IMCJ: Congratulations.

Dr. Staats: Thank you very much. I'm a lucky guy.

IMCJ: When it comes to issues dealing with pain, you're the go-to doctor?

Dr. Staats: I practice pain medicine and I started the Division of Pain Medicine at Johns Hopkins in the early 1990s. I was part of developing many different strategies in use today for managing chronic pain. I came up with a new theory of pain that integrated the psychological with the interventional, with the biological. This was important because prior to this the predominant approach was to ignore pain, as it was thought to be a problem of behavior. I became one of the first academic anesthesiologist to implant devices like spinal cord stimulators and peripheral nerve stimulators to help with patients with pain. Neuromodulation became a deep focus of mine for some of the more difficult problems. As for being the go-to doctor, I worked at a tertiary care center and thus saw patients after they were in pain for years. In this setting I was maybe not the first person, but maybe I was the last person people saw when other strategies had failed. Then I went off into private practice in approximately 2004 and I continued to see patients for many years after that.

IMCJ: What led you to specialize in pain management?

Dr. Staats: It's interesting. I thought when I went to medical school I wanted to be an orthopedic surgeon, but when I got into my orthopedic rotations, I found that it was not for me. I did not see the potential for innovation. But unfortunately, I didn't know what else to do. My next rotation I did anesthesia. Here we got to do nerve blocks to numb up an area and take away pain for surgery but

return the function just a few hours later. I thought it was just magic.

More importantly for me, our treatment strategies were somewhat primitive for patients with chronic pain. Looking at the number of people out there suffering, I believe 8% of the population have high impact pain, meaning it's doing something that really adversely affects their life. I wanted to work in innovation to come up with better ways to help people with really difficult pain problems. It has been a gratifying journey to help others. While it was not something I had planned the journey fit my skill sets and interest perfectly

IMCJ: Johns Hopkins was your first foray into pre-med.

Dr. Staats: Yes. I went to medical school at the University of Michigan, and I did my residency and fellowships at Johns Hopkins. They asked me to stay on and create a division of pain medicine and I became chief of the Division of Pain Medicine which I ran for about 10 years.

IMCJ: You eventually started Premier Pain Centers and merged with another group, which became the largest health center of its kind in the world.

Dr. Staats: Correct. We had a large number of pain physicians across 14 states. I was chief medical officer there for a number of years, and I stepped down from that position towards the end of 2023.

IMCJ: electroCore is another of your developments. What I found interesting was you got involved with the treatment of COVID and the PTSD areas.

Dr. Staats: Sure. Let's start with acute COVID. When COVID hit, a lot of us were sitting around wondering what to do as there was no treatment or cure on the horizon. Everyone was fearful of getting COVID, because of the high morbidity and mortality associated with covid. People were dying from the cytokine storm, and an inability to ventilate, or breathe.

We had this two sets of problems that I knew would potentially be benefited from vagus nerve stimulation. We submitted to the FDA an emergency use authorization, which they granted relatively quickly. In July 2020, they granted an EUA, I think, the first medical device as a

treatment for acute COVID to help with airway reactivity associated with covid. We subsequently have performed two studies showing that we can both decrease the cytokine reaction and improve oxygenation and ventilation in hospitalized patients with acute COVID. It was gratifying to be a small part of that solution.

Long Covid was another area of early interest. It had a number of similarities to the world of pain of the 80s and 90s. During this period patients' complaints were ignored. Patients were maligned as drug seeking, or simply trying to avoid work. Our approach to patients blamed them, since we did not fully understand what was wrong with them. I see the same thing happening with long COVID patients. Physicians don't really understand how patients who are healed from the disease can have so many problems. Brain fog, severe headaches, gastrointestinal distress, persistent cough are but four of 150 different symptoms that people with long COVID complain of. I became very interested in how to help these patients and I sat on the Medical Advisory Board of Survivor Corps. It was a very large patient advocacy group made up of premier clinicians who had a goal of helping validate patients concerns, develop a pathophysiologic understanding of the disease, as well as rationale treatment strategies.

Long Covid is going to be a serious problem that we will have to address for years to come. It will bring a wave of disability that we are simply not prepared for. There are a 100 million plus people worldwide who have long COVID. I can't over state how important it is to develop rationale treatment strategies, selective for this population.

It is interesting that one school of thought is that the virus damages the vagus nerve. When one considers all that we know about what the vagus nerve controls it starts to make sense that a damage here could be associated with some of the problems of long Covid. Stimulation of the vagus thus makes sense and is worthy of further research. There are now four different studies that have been done with either using auricular nerve stimulators or cervical non-invasive vagus nerve stimulators to treat the symptoms of long COVID and they all point towards vagus nerve stimulation being a viable strategy for this very difficult problem.

IMCJ: What you're saying is, just to make sure I heard you correctly, people who've had COVID and who've had long COVID are still having symptoms?

Dr. Staats: They still have symptoms many years later. They can be told that they're cured from the virus, but 30 days later, they still have symptoms. It is then called PASC or post-acute symptoms of COVID or long COVID. There are probably several overlapping pathophysiology, from vascular injury, persistent inflammation, end organ damage and neurologic damage, specifically damage to the vagus nerve. The vagus nerve touches many different organ systems and damage to the vagus nerve can create symptoms as diverse as cough to brain fog. There's a fair

amount of data starting to roll out that many of the patients with long COVID have a damage to their vagus nerve. And when we start to think about this in a mechanistic way, it starts to make sense. It is important as a society that we do our best to understand the problem and not malign patients simply because we don't fully understand the problems and mechanisms of injury.

IMCJ: I've heard that long COVID or COVID itself has affected joint health.

Dr. Staats: Yes. It's caused persistent inflammation in many different areas. The brain, lungs, joints, muscles, and we go down the list. It can cause inflammatory problems throughout the body.

IMCJ: When referring to long COVID, do you find that similar to the pain issues that people incur with fibromyalgia and chronic fatigue?

Dr. Staats: Yes. In fact, when we were just getting started in the field of long COVID, if you look at the CDC websites on the topic, they describe it as very similar to myeloencephalitis, which is what people get when they get post-viral syndrome. I think the CDC guidelines should dive a little deeper. Long COVID is worse than most viruses and most post-viral symptoms. People can be very sick from post-viral illnesses. You may have heard some stories today at the IFM meeting that post-viral illnesses can cause damage in many ways. I think one of the things that we saw with this particular virus is that a number of patients with long COVID have a damage to their vagus nerve, which has set off a cascade of problems across organ systems because the vagus nerve touches so much. But I do think there are a lot of similarities between fibromyalgia, post-viral symptoms, and long COVID.

IMCJ: Because one of the issues with a lot of doctors will say fibromyalgia is in your head. Do you think that this might be a chance that they may look at it and say it really does occur as a condition?

Dr. Staats: I would say the doctors who are saying fibromyalgia is all in your head, are both ahead of the game but also are not doing it justice. Patients with long covid are not crazy, but there can be a problem with inflammation in the central nervous system. So, in essence it is in "their head." And there's robust research going on looking at the neurotransmitters and the cytokines that are occurring in patients with fibromyalgia. It's processed in the head.

There are thus striking similarities with patients with chronic pain of the 80s and 90s. They were always told, "You're crazy. It's all in your head. You're just seeking drugs." When truth be told, these same doctors simply did not make the correct diagnosis. The parallels between long

COVID and pain are just striking. Long COVID and pain are both not psychiatric diseases. It's not in their head.

IMCJ: We'll get more into the vagus nerve, but PTSD is another area that you've done a lot of research in.

Dr. Staats: Indeed. electroCore, a company that I co-founded, has been working with a variety of investigators nationwide on post-traumatic stress disorder and submitted it for and received a breakthrough designation from the FDA as a novel treatment, something that's desperately needed for the treatment of post-traumatic stress disorder. I'm very concerned about our veterans who are coming back from Iraq and Afghanistan wars with PTSD. This is a silent but deep wound, and we need to take it seriously. We need to validate the concerns of our soldiers coming back, understand the physiology and invest in treatment options.

The work that is being done by various investigators, most notably Doug Bremner at Emory University, has shown changes in anatomy and function in specific brain areas occurs in patients with PTSD. These same areas can be treated with vagus nerve stimulation. They've shown changes in blood flow that can be improved with vagus nerve stimulation. They've shown changes in cytokine response, specifically IL-6 that spikes during episodes of post-traumatic stress disorder. All of these can be reversed with vagus nerve stimulation.

Vagus Nerve Stimulation is thus an exciting area for research and treatment. This ongoing research has validated the underlying pathophysiology underpinning the silent epidemic of PTSD, but also has provided a line of site to rationale treatment strategies. I hope to help these outstanding researchers help our soldiers and others with PTSD

IMCJ: Is the Veterans Administration looking at the vagus nerve?

Dr. Staats: The Veterans Administration (VA) in fact is looking at it. The two big sites that are ongoing trials right now are at the VA in Emory and the VA at UC San Diego. Those are two big sites, and we will likely be starting a third site with non-military victims as well in the near future.

IMCJ: What does the study evidence show at this time?

Dr. Staats: There are a number of studies that are ongoing, but there's also a lot of evidence that has been published or presented. Published literature shows improvements in autonomic scores, the PTSD checklist, which is a patient's self-report of how they are feeling. Data shows improvements in blood flow in specific brain areas, changes in inflammatory cytokines stress hormones, declarative memory among other positive findings. Those

are all published papers in double-blinded sham-controlled trials. More work can be done, and should be done, but what we have right now is exceedingly promising

IMCJ: What about the thousands of Vietnam veterans from that era who suffer from PTSD. It was never acknowledged. Would this treatment help those people as well?

Dr. Staats: Yes. most certainly. I think while most of the people that are being treated in the Veterans Administration hospitals today with PTSD are suffering with consequences of the Iraq and Afghanistan wars. There are a lot of people who experienced trauma during the Vietnam War, who are suffering with PTSD. There's no reason to think that there's a time limit on treatment, that if you don't catch it by a certain number of years later, these therapies aren't going to work. It should be entertained in all patients with PTSD, regardless of how long they have had it..

IMCJ: Being at the forefront of vagus nerve stimulation you work with practitioners in their practice on how they can implement?

Dr. Staats: Absolutely. I think a lot of the practitioners across many different disciplines have tuned into the fact that the vagus nerve is important in their area. I don't consider myself a gastroenterologist, but when the gastroenterologists want to study vagus nerve stimulation, they need someone with some expertise in the modality and a deeper understanding of the function of the vagus nerve. It's always a pleasure to work with new specialties. I guess it's the old saying I'm a jack of all trades and master of none. This is an opportunity for me to learn a little bit about GI, a little about pulmonology, infectious diseases, about Parkinson's disease and Alzheimer's disease. There are so many specialists who are now interested in what the vagus nerve can do for "their organ" or "their disease". So far it has been a 20-year education on how the vagus nerve works.

IMCJ: Do you look at the vague nerve for mental health disorders as well?

Dr. Staats: Sure. Look, there's work that was coming out on depression. We have written a paper on anxiety. Those are two areas that are being looked at. Other areas that are being looked at are frontal or cortical functioning. The NFL recently funded a study on post-concussion headaches in elite athletes. Lots of different areas that the vagus touches, and there is potential that we could actually positively impact so many disorders. That doesn't mean that vagus nerve is going to solve all problems. But the vagus nerve touches a lot. I think of the human body as a computer. The organs are the hardware, and the software is the vagus nerve

IMCJ: With all the work that you've done, and all the research about pain does anything surprise you?

Dr. Staats: I would say yes. I'm always excited and engaged when the studies show what I think is going to happen, happens. But then I sometimes get surprised when the studies don't pan out and I stop and realize that there is still much to learn.

IMCJ: You're a prolific writer from what I have read about you. Articles, books, and book chapters. What have you learned about dealing with pain? What can people actually do? Is there anything they can do other than take some kind of medication?

Dr. Staats: I spent most of my life as a pain physician trying to help people and I would say the first step in understanding their pain is to make the right diagnosis. So often patients are given the wrong diagnosis, which takes them down the wrong path. I see this in spine surgery all of the time. Different physicians look at the problem very differently. One can see different specialists that all come up with different diagnosis, and different treatment strategies. On one extreme a surgeon may look at a disc herniation in the spine and say, "We need to operate." Others recognize that there are a lot of other things that can cause pain and offer much more conservative options.

My first plea to patients is see a competent pain physician who's really an expert in diagnosis of the problem. Most of the time with back pain, for example, you do not need to have surgery. If you have been given the wrong diagnosis, you most certainly will not do well with surgery. I can almost guarantee that. Failed back surgery is a problem in the United States because so many people have gone through surgery because they had the wrong diagnosis at the outset.

I would also say, once one has the right diagnosis, there are a lot of minimally invasive strategies that have been proven to be effective in pain. Treatment strategies can vary between little injection to implantation of internal electrodes and batteries that turn off the pain.

Neuropathic pain is another area of interest. I developed an approach for severe neuropathic pain using high dose hot peppers to effectively burn out the pain. There is now actually a patch that is commercially available that can help people with certain types of nerve injury pain. There are a lot of strategies, but again, start with a really good diagnostician and then hopefully that diagnostician has got a lot of tools in their toolbox. Think about what's the right tool for your problem.

IMCJ: As an MD, are you a proponent of dietary supplements that might help?

Dr. Staats: Oh, absolutely. I think, in fact, one of the things that I would say is that Western medicine has minimized

the importance of things like dietary supplements and are actually taking a look at what is our hormone status, our vitamin D level, and more. It's just a mess. Groups like the Institute for Functional Medicine have led the charge in understanding the diagnosis part that we talk about. If you don't know what the hormone status is or you don't know what you're deficient in, you're very likely going to make the wrong diagnosis. It's a critically important aspect of care.

IMCJ: You've received numerous awards. Does one or two stand out the most because of the work and research you've been able to do? What are you most proud of?

Dr. Staats: I don't know. It's been a pleasure to be nominated for awards frequently by my peers for work that I've done. Lifetime Achievement Award from the North American Neuromodulation Society a few years ago was very meaningful to me. Recognition by the American Society of Interventional Pain Physicians was meaningful. The Trailblazer Award from the World Institute of Pain, from the work that I do to educate physicians across the globe was also meaningful to me. They're all meaningful. And the fact that people who I know and who have worked with me over the years have valued what I've done just touches me deeply.

IMCJ: Of all the people you've worked with or patients, what's the best compliment you've received? Anything that comes to mind?

Dr. Staats: I suppose that my patients consider me a caring doctor. Someone who really does care. I've always considered it a tremendous honor to care for patients, to operate on patients, and that people trust me with that confidence is one of the greatest compliments a physician or a surgeon can hope for.

IMCJ: So then, what would you say is your greatest virtue?

Dr. Staats: I don't know if it's a virtue, but I can tell you that it's true. The first thing I told my fellows, and the last thing I told my fellows is do the right thing. My greatest virtue for my patients is I always look at the patient as if they're my mother or father when they were with me. And I try to come up with the strategy that is the right thing for them, and that's what I would say every physician should strive for.