Could Hyperbaric Oxygen Therapy Be the Breakthrough You've Been Waiting For? Transcript

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Introduction to HBOT and Lyme Recovery

Well, so we know hyperbaric significantly supports brain healing and regeneration. So the brain is highly oxygen dependent. It makes up 2% of our overall body mass and has a demand of 20% of the oxygen that we inhale and consume.

So as you can imagine, if you increase oxygen under pressure, that dramatically enhances the cerebral blood flow and oxygenation to your brain. Hyperbarics promotes neurogenesis, the formation of new neurons, primarily by elevating growth factors like BDNF and VEGF, which are critical in repairing damaged neuronal pathways and the formation of new pathways as well.

Clinically, this translates into measurable improvement in cognitive function, reduced brain fog, better memory retention, and decreased neuropathic symptoms like pain, numbness, and tingling.

And so this is particularly important in Lyme patients where neurological involvement is common and debilitating sometimes. This is Doctor Talks, real talk from real doctors on the issues that matter to you most.

Welcome back to Lyme Bites, rebuilding immunity, reversing inflammation and redefining recovery. Today's guest is Mare Patel, owner of OxyHealth, the world's leading manufacturer of hyperbaric oxygen chambers.

For over two decades, OXIE Health has set the gold standard for safe, accessible, and clinically effective hyperbaric technology, empowering patients and practitioners worldwide to harness the healing power of oxygen.

In this episode, we explore how hyperbaric oxygen therapy or HBOT can play a powerful role in recovering from Lyme disease and other vector borne illnesses.

We'll dig into the science behind oxygenation and tissue repair and how HBOT supports neuro regeneration, immune function, and what specific protocols may benefit patients battling chronic inflammation and persistent infections.

We'll also break down the technology itself dispel common misconceptions, and discuss how more people, including children, can access this adjunctive therapy safely and effectively.

This is Lime Bytes. Breathe deep and let true healing begin. Hi, Mayor. Welcome to Lime Bytes. Thanks for joining us. Hi, Dr. Hinchy. Thank you for having me today.

I'm excited to be here. Absolutely. So tell us a little bit about how and why you became involved with hyperbarics. Of course, you know, interestingly enough, I actually started as a pharmacist, so completely outside of this space and this industry that we're in together.

Really, my story started when I herniated my disc.

Mare Patel's Personal Journey into Hyperbarics

So throughout pharmacy school, I took on weightlifting as a hobby of mine, something that was very healthy and competitive, as you can imagine with some of my friends at the time.

And I pushed myself a bit too hard. And I got to the point where I started to just push more weight with improper form. And as a result, I had a disc herniation in my L3, L4.

Now at the time I tried all the standard GDMT right being in pharmacy school I was very well aware of what the protocol was in managing a lot of the symptoms I was dealing with and really a lot of the guideline directed medical therapies weren't durable.

They felt like they were quick fixes, but they really couldn't give me any lasting effects for me to continue doing what I did. At the time, I would work extensive shifts in a hospital and a retail setting.

And at the end of my shifts, I really could not get a grasp on some of the symptom management, especially when it came to the pain involved. with this disc herniation.

And so my father being the founder of OxyHealth, you know, I was talking to him in conversation. And the first thing he said to me is, do you know what I do for a living?

Let me send you something, right? Especially if it's pain and inflammation related, let me send you something and just try it. And being in pharmacy school, they don't teach you anything about hyperbarics.

And so I I wasn't really too sure what to expect. I knew he had built a business around this and I hadn't been involved to the extent to know what actually this has done for the world and what it can do for me.

And so after using a hyperbaric chamber for two sessions, I saw an immediate effect in being able to do what I wanted to do. I would spring out of bed as opposed to being stuck in bed for an extended period of time due to some of the severe pains I was experiencing.

And the effects were durable. consistent with my therapies on a daily basis or my sessions on a daily basis I was able to function I was able to start working out again and it completely blew my mind and so I knew there was something here and that's that's the point of my life when I reach out to my father and said I'm blown away by what this did for me I'm reading a lot of this different research online and I'd like to explore more and I want to learn more about what you're doing And that really was my introduction into this space.

And so he brought me in, I started working under him during my time in pharmacy school. And I started to realize that this was much more than just pain management.

This is something that was changing thousands of lives across the world. I mean, it was being used for, of course, pain management, but a lot of healing and recovery.

We have patients with acute injuries, chronic diseases, all struggling from levels of fatigue, pain and affected qualities of life that were now able to get their quality of life back to some extent.

He had sent me to a clinic where there was a patient who had been in a motor vehicle accident about three years prior to my visit, and he had lost complete mobility from head down.

And I didn't know what to expect. I was in conversation with his wife at the time while he was in his very first session in a portable hyperbaric chamber.

And the chamber started to rattle on his very first session. And I, being inexperienced, was a little concerned not knowing what's going on. I'd never been in a clinical setting around hyperbarics, and this was my first clinic visit at the time.

And when we went to the window of the device to check in on the patient, he had actually lifted his arm and grabbed the top of the frame inside of the chamber for the first time in the past three years since that accident.

Wow. And I have to say, there was not a dry eye in the room. And that's when I realized what effect this had on a patient's life and what this can do for the world.

And being in the position I'm in, I saw an opportunity to Fulfill my duty and serving the world on a large scale and to

do so with my father so that's really how I got into the space and slowly transitioned into taking the helm here at oxy health and Really my it's my goal and focus to continue what my dad did to spread as much education awareness around this amazing modality and therapy my father had a vision and to make hyperbarics more accessible.

And at the time, 30 years ago, hyperbarics was really limited to 14 FDA approved indications and all 14 of those FDA approved indications are severe life threatening.

And part of the reason why is because this was considered a high risk modality. It of course can be used safely with proper training, but you Traditional hyperbaric chambers are pressurized with 100% oxygen.

They use higher pressure protocols. And so there are risks and concerns around oxygen toxicity, barotrauma, and even fire safety concerns because of the fact that we're pressurizing these devices with 100% oxygen.

And with my father's vision, he introduced a concept that pressurized with ambient air. So still using the same mechanism and driving force of pressure, but now supplementing oxygen directly to the patient's mask, as opposed to submersing them in this 100% oxygen environment.

And that's really empowered a lot of physicians to feel more comfortable about considering something like hyperbarics for non-life-threatening indications.

Over the past 30 years, the door has been open because of a lot of his efforts in those early days. And now Hyperbarics is being used for numerous off-label indications, which in other countries are now approved indications for Hyperbaric use, but still limited here in the US.

And so it's my mission now to continue that legacy and to continue making Hyperbarics more accessible and to get to a point where everybody has access to this amazing modality.

Thank you for sharing that. Out of all the times that you and I have talked, I never heard you tell that first part of that story. That's awesome. Honestly, I don't think it's a far stretch that you've gone from a pharmacy degree or a pharmacy student to doing this because oxygen is nature's most powerful drug.

And I think that the effects of oxygen, especially under mild pressure, are very comparable to a lot of the drugs that are out there. They're safe.

How Hyperbaric Oxygen Therapy Works

And as far as like pain management, I mean, how awesome that you have something that's actually effective with pain management because there's not a lot of things that are but it's effective because it's really getting at the root cause and it's helping to resolve the inflammation and actually heal the area that's compromised and that's why we're seeing the pain reduction because we're actually helping and doing root cause medicine with this.

Of course, of course. It's a lot different than pharmacy, right? What really drew me into my interest here in this industry is finding holistic approaches to really attack that root cause as opposed to having to be on some sort of pain regimen the rest of your life or with different medications that really aren't there to fix the root cause, but they're to patch a lot of the symptoms that you're dealing with.

So completely different from the pharmacy world, but some similarities in what our focus is. And at the end of the day, we're really here to serve patients, right?

We want to help patients live a proper quality of life and to be able to manage these things from a holistic approach, a healthier approach overall with minimal side effects.

Absolutely. And I love how it was your dad's mission to make this accessible to everyone. And so happy that you're carrying on with that. Of course. It's a blessing every day to be here.

All right. So for those unfamiliar with hyperbaric oxygen therapy, tell us a little bit about it. How does it work at a cellular level? Of course, of course.

So in a sense, we're placing patients in a pressurized environment. And being in that pressurized environment, when you're under pressure, the pressure acts as a driving force to drive more oxygen into your body.

And so if you're familiar with Henry's law, for example, the law of diffusion, we're using pressure to diffuse oxygen into your blood plasma. So right now, your red blood cells are picking up oxygen from the air you're breathing and delivering them to various tissues based on their demands.

In a hyperbaric environment, we're of course topping off your hemoglobin, which isn't the big mechanism by any means, because assuming you're healthy, you're already at maximum saturation.

But what it's really doing is diffusing that oxygen into your blood plasma in significant amounts. So now, instead of having the carrying capacity of just the hemoglobin, we're able to increase the pressure gradient to get more oxygen delivery to various tissues in your body.

In your body, for example, there's actually a chain of events that happens going from your red blood cell from the time you inhale the gas mixture you're breathing to the actual delivery point to the cellular level.

And through that process of delivery, there's a drop off of pressure, therefore leading to a decreased amount of oxygen that actually gets to the cell.

Now in a hyperbaric environment, because of the pressure gradient and because of the hyper saturation, we're able to, in a sense, supplement oxygen in high levels at a mitochondrial level.

Now when you supplement oxygen in excess amounts to your mitochondria, your mitochondria are adapted, so they're going to use it. they're going to use that oxygen to not only build more cellular energy, but to adapt as they get used to that environment, therefore increasing the size of the mitochondria, increasing the number of mitochondria because of the excess oxygen that your body sees is available for its use.

And so in doing so, we're able to build a lot more cellular energy, which is the fuel that your cells need to repair and recover. Without fuel, your cells can't function and do what they're innately programmed to do.

One of the mechanisms of hyperbarics is in giving your mitochondria the ability to produce more fuel for those cells, which is step one in any process of healing.

Outside of that, there's a very strong anti-inflammatory effect. And so if you know anything about inflammation, inflammation is necessary. It's a protective mechanism in our body, but it's also inhibitory to the healing.

So it's kind of a double-edged sword. And so something like hyperbarics can reduce that inflammation so your cells can now move from the inflammation phase into proliferation and start those processes as they continue their function.

And lastly, the intermittent exposure of going back and forth inside of a hyperbaric chamber actually kickstarts a mechanism called HIF-1?. That's your hypoxia-inducing factor 1?. And that is a result of what they call the hyperoxic-hypoxic paradox.

And with this paradox or this function, the intermittent exposure in a sense is tricking your body into thinking it's hypoxic when it's not, therefore kickstarting all these adaptive protective responses to combat hypoxia.

And so when you're in a hyperbaric chamber, for example, in that hyper oxygenated environment, your body mildly acclimates to it, not in a sense where you become dependent on it, but your body's internal gauge thinks that this is the new environment that it's in since you're in there for a sustained period of time.

The moment you step out, that same gauge is then tricked into going the other way, thinking that your body is in what it thinks is a hypoxic state when you're actually not because you're still in your normal environment.

getting adequate oxygen delivery to various cells inside of your body. And so we're able to trick your body into activating those protective mechanisms that it would kickstart things like angiogenesis, stem cell mobilization, neurogenesis, the release of different growth factors by going back and forth without actually having to place you in a hypoxic environment.

And so that's a general overview of how Hyperbaric does what it does for some of the larger mechanisms that we see associated with its regenerative properties.

And outside of that, there's an effect on supporting your immune system, resetting your immune system, if you will, by putting you in this oxidative stress environment and just promoting overall healthier function as a whole.

And so you just nailed four out of like the seven different bases that I'm trying to cover when I'm working with a patient that has Lyme or one of these other chronic vector-borne diseases.

So that's amazing. So we're going to be increasing the effectiveness of the mitochondria. We're going to be decreasing inflammation. We're going to be modulating the immune system.

I don't think you touched on this yet, but it also helps to enhance detoxification but then also repair, stem cell generation, all of these other things as well.

So expanding on that, and obviously this is going to kind of be like the basis to the answer of my next question, but I was going to say, tell us what these physiological effects of HBOT, like how do they improve chronic infections like Lyme, Bartonella, Babesia, et cetera?

Of course, yeah. Well, chronic infections for a Lyme disease such as Bartonella, Babesia, they often persist because they're hiding in oxygen-poor tissues.

So this makes it ever the more harder for antibiotics to reach them as well as your internal immune responses. And so hyperbarics creates an environment that's hostile to these pathogens by significantly elevating the tissue oxygen levels, which then directly inhibits the pathogen replication.

And so, for example, we're very adaptive. Our bodies are smart. They can adapt and we can overcome certain stressors in our body. Bacteria are a completely different story.

They actually don't have the same ability to adapt as we do. So in high oxidative stress environments, there's more of a suppressive effect. And so outside of what hyperbarics can do for the actual toxins themselves and inhibiting some of those toxins, they can actually work to suppress some of those bacterial growths because of the fact that we're using an oxidative stress in itself.

And so outside of that suppression, these infections trigger persistent inflammation, right? So they're harming tissues, they're weakening your immune responses.

And so hyperbarics, as I mentioned earlier, has a very strong anti-inflammatory response.

HBOT for Chronic Infections and Lyme Research

So it down-regulates pro-inflammatory signals, it up-regulates anti-inflammatory signals, it reduces oxidative stress overall. During the session we are inducing oxidative stress, but because it's so acute and only for your session, the moment you come out and you off-gas all of the oxygen, you're left with your body's natural adaptive response to those higher oxygen radical exposure inside of your system.

And so now you're left with all these scavenger molecules with antioxidant properties that can then further reduce

more oxidative stress. And it can also help the immune system identify and eliminate pathogens a little bit more effectively.

And so the benefit really is twofold. We're decreasing symptoms like fatigue, joint pain, brain fog because of those mechanisms at play. And we're also enhancing long-term immune function, which overall supports the patient's recovery and quality of life.

That's amazing. What studies can you reference? I know there aren't a ton when it comes to Lyme disease and other vector borne infections, like so specifically, you know, treating with HBOT.

But I know that we can kind of like extrapolate other studies that show that it decreases neuroinflammation or is, you know, able to balance the immune system or, you know, repair and increase the number of or the strength of mitochondria, etc.

One of the largest papers put together was actually by Dr. Fife and Dr. Neubauer. It's called hyperbaric oxygenation for Lyme vasculitis. They outline a lot of their findings in how hyperbarics plays a very pivotal role in their management for Lyme disease.

There's also a case report from 2014 that came out of Taiwan. that further explores a lot of these mechanisms to support this initial paper that was put together by Dr.

Feif and Dr. Neubauer. But to be honest, there's not much research currently out there. And not because it's not something that's feasible for Lyme disease.

I mean, you out of anybody that knows as well, as well as a lot of other physicians in this space, that hyperbarics has shown in clinical outcomes to be very effective for their patients, especially patients that are affected by Lyme disease.

But there just hasn't been much mainstream adoption in hyperbarics for Lyme disease. And so for that very reason, we don't necessarily have many academic institutions on board that would be there to facilitate a lot of the necessary research that we need to further explore why hyperbarics does what it does for Lyme disease and how effective it really is in managing a lot of those symptoms.

You know, honestly, it brings ever the more reason why we should support organizations like Lime Bites to bring more education and awareness around Lyme disease and hyperbarics to get more acceptance from a lot of the allopathic space and bringing hyperbarics into this field and to help move the needle really when it comes to research in Lyme disease.

Yeah, that's a very good point. I like that. Sign up. I have my ticket. I'll definitely be there. Sign up and come to the Lime Bytes Symposium. Okay, so let's talk a little bit about how hyperbarics help with neuroregeneration, especially for patients with cognitive dysfunction, neuropathy, or neuropsychiatric symptoms even, whether it's during an acute infection, chronic infection, or even post-infection.

Yeah, of course. Well, so we know hyperbaric significantly supports brain healing and regeneration. So the brain is highly oxygen dependent. It makes up 2% of our overall body mass and has a demand of 20% of the oxygen that we inhale and consume.

So as you can imagine, if you increase oxygen under pressure, that dramatically enhances the cerebral blood flow and oxygenation to your brain. And so hyperbarics promotes neurogenesis, the formation of new neurons, primarily by elevating growth factors like BDNF and VEGF, which are critical in repairing damaged neuronal pathways and the formation of new pathways as well.

So clinically, this translates into measurable improvement in cognitive function, reduced brain fog, better memory retention, and decreased neuropathic symptoms like pain, numbness, and tingling.

And so this is particularly important in Lyme patients where neurological involvement is common and debilitating sometimes. And also in a lot of Lyme patients, we see a lot of inflammation, neuroinflammation around the brain.

And so going back to one of the core mechanisms in the strong anti-inflammatory effect, Hyperbarics does a very good job at reducing that inflammation to allow for that healing and recovery that we need.

What are some common treatment protocols? Because you can't just go and do one hyperbaric session and expect to see miracles. You might feel a little bit better, have a better night's sleep that night, but you have to actually do the hours and you have to do them in succession.

So can you go through a couple options?

Neuroregeneration and Cognitive Benefits

What would you say, what would be like the shortest effective treatment protocol and then, you know, get into some of like the longer, more intense ones?

Of course, yeah. Well, with Lyme disease, typically from what we've seen in the little research that is out there is that the protocol range really is in the higher end of that, of what you'd see in a hyperbaric session.

So between two to two and a half atmospheres with each session lasting about 60 to 90 minutes. So a common Lyme protocol that you might see would include 30 to 60 sessions, three to five times per week spread out over weeks to months.

And there's a dynamic range for a reason because of the lack of research that there is in this space for that. But this really goes back to the intermittent exposure that's required for hyperbarics to actually do what it's intended to do.

So ideally, ideally if a patient is able to go to the clinic five times a week, right? You want as high of a frequency as possible to really get the most out of kickstarting the hyperoxic hypoxic paradox.

We'll see patients go in sometimes three times a week because it can be a little bit obstructive to actually go to the clinic five times a week. But it really depends on what the goals are, what you're able to commit to.

and also just understanding that you can't just do a one and done in something like hyperbarics. Now, for the minimum set sessions to do, I can't answer that for Lyme disease specifically, but I can speak about some research that's recently come out.

It was the summer of 2023, there was a study put together by Dr. Kent McLaughlin at the University of Madison, and he wasn't looking at anything Lyme specific, But what he was looking to measure was what does hyperbarics do as far as stem cell mobilization?

And after doing 10 90-minute sessions for his group of patients, he found that after the 10th session, actually 72 hours after the 10th session, he had a measurable three-fold increase of the amount of stem cells that were mobilized from the bone marrow into blood circulation.

And so for reference, there actually was another study that measured stem cell mobilization with a higher protocol. In that study, I believe it was based out of Israel, they did 60 sessions at about two atmospheres, or a little bit more than two atmospheres.

And after those 60 sessions at that high pressure, they had a measurable eightfold increase in stem cell mobilization. So it goes to show that with just 10 sessions alone and only ambient air, no additive oxygen, at mild pressure, 1.3 atmospheres, we saw this measurable difference in what hyperbarics can do in kickstarting some of these mechanisms that we're associating with the longevity and the healing of this amazing therapy.

But also, if you go to the higher end, there is a higher measurable difference. But again, you can't really compare the two, right? Because we're comparing 10 sessions without oxygen to 60 sessions with oxygen at higher pressure.

Treatment Protocols and Dose Research

And so I myself, the first question I had when I saw that was, why do they stop at 10? What would have happened if they went to 60 in this mild pressure chamber as opposed to 10? Would we have seen a 5-fold increase?

Would it have stopped at 6? And so all of this to say there's still a lot of questions that need to be answered anytime you're using hyperbarics. A lot of physicians will stick to the gold standard 40 sessions for that very reason, just because lower session protocols haven't been well researched.

I think that over the next five years, five, 10 years, we're going to see a lot more in researching what is that lowest range that we can use because Of course, in order to make it more accessible, we need to make it more convenient for patients and more feasible, right, when it comes to their adherence.

So something I'm definitely excited to look out for the next few years. And maybe on the next podcast, I'll have an answer for you. I would love that.

Yeah, that's really impressive, only 10 sessions and to see that much of a difference. And yeah, it doesn't really make sense, like why not go to the 60s?

So at least you are keeping those two things steady, right? Like you're comparing 60 sessions to 60 sessions. But let's talk a little bit. So like with this accessibility, right?

Like if you're using higher atmospheres or a hard chamber or something like that, like for a lot of people, because of, you know, just the ability to get in them and the cost, et cetera, You know, it can kind of be out of reach for a lot of patients.

So I know that Dr. Jason Sauners has done some studies, right, that you're going to share with us actually comparing a mild atmosphere of like 1.3 to a lot of these hires and what the outcomes were there.

Yeah, of course. And you know, his research is actually very exciting. You know, I say over the next five years, we're going to see a lot of advancements in this space.

And the study or the research he's currently building right now will be a big part of that and facilitating that because he's comparing 1.3 atmospheres to 2 atmospheres.

And so he was out to seek answers, right? Which is better? Which is more effective? Is the higher pressure more effective? Because the theory has always been the higher the pressure, the larger the dose, the more effective it can be, right?

Right. But in medicine, it's about finding the lowest effective dose so we can minimize symptoms and minimize adverse events. And in his research, He actually had some pretty interesting findings.

When looking at inflammation, for example, he found that when comparing 1.3 to 2 atmospheres, they affected some of the same cytokines when you're looking at anti-inflammatory markers and pro-inflammatory markers and the up regulation and down regulation of each.

But he also found that lower pressures affected different inflammatory markers than higher pressures. So there were some shared traits, but there were also completely different mechanisms altogether and what they did.

And when it came to things like neurological injury, for example, he actually found that lower pressures were more beneficial because at higher pressures, it could be a bit overbearing for the body, right?

Your brain has the highest oxygen demand in your body and so it's the most sensitive to oxygen. And if there's any type of acute injury associated with the brain and it's affected, it can be a little bit more sensitive to things like oxygen.

And so Really in his research he found that the sweet spot was that lower range for that very reason because the brain is already very sensitive and it wasn't overbearing for your body.

It's very important to understand that this is an oxidative stress and so there is a such thing as too much, right? There can be too much for us to handle and You know, I'm very excited for him to come lecture at Lime Bites to share a little bit more about his findings because I myself would like to know what the lowest effective dose possible is for different indications.

And it will vary from indication to indication, but you know, I'm just very excited to see what, what the next few years entail. And, you know, as he starts to go through some of his more, some more of his findings and publish a lot of his work, I think it will change the industry forever.

Yeah, I'm excited about that too. And I'm excited to hear him talk and go through this. And I think one of the great things is that, you know, all of the illnesses, we'll call them, you know, or injuries that are able to be helped at that 1.3 atmosphere.

I mean, this is great news because this is where you can get a soft chamber for your home, right? And then you really have this increased accessibility for patients because even financial piece aside, being able to go somewhere if you're working and then being able to go to a clinic during the time that they're open and be able to get in the chamber for the amount of time that you need to, just the logistics alone can be so prohibitive, especially for a lot of my patients.

Being able to get a chamber that you can rent or you can purchase and keep in your home and, you know, pop in there first thing in the morning and maybe last thing before you go to sleep is a complete game changer.

I completely agree and this goes back to that frequency, right?

Home Chambers, Accessibility, and Safety

So I myself would be curious to know if we were to compare using a home hyperbaric chamber in a mild setting every day compared to going two to three times a week to a high pressure device in clinic, what would that look like?

Because that seems like a more reasonable comparison between the two. Because soft chambers, as you said, you hit the nail on the head. They're more convenient for home use.

So they can be more ideal for maintaining one's overall wellness and actually have higher adherence than going to a clinic. And that's what we do see quite a bit in the industry.

What we'll actually see is that individuals will go to a clinical hyperbaric chamber, a higher pressure unit, to complete a certain protocol and then continue more of a maintenance therapy with the home hyperbaric chamber for overall wellness, for mild anti-inflammatory conditions, and just overall longer-term maintenance because they are safe, they're user-friendly, and they're great when it comes to looking at accessibility around the therapy itself.

Yeah, all great points. So what do patients and clinicians need to know when they're considering adding HBOT to a recovery protocol for Lyme or another complex chronic illness?

Well, some always, of course, if you're a patient at home, you always want to consult with the physician. So make sure if you're, if you have Lyme disease and you're looking to get into hyperbarics or to bring this into your protocol, work with a Lyme doctor, right?

You want to work with physicians that have experience in the space using things like hyperbarics for your, your disease state because it's. It's not new by any means, but its uses are very new.

The new broad spectrum of what is being used for off-labels is very new. And there's no standard guideline-directed medical therapy when it comes to hyperbarics.

A lot of it is based off of the research that we see out there, as well as what physicians are experiencing firsthand with their patients. And so it's very important to know that this can be accessible.

It's very accessible actually, but it's still a medical device at the end of the day and it's a prescriptive medical device. So there needs to be physician oversight to make sure that you're using it safely and effectively.

And you know, when you're looking at things like hyperbarics, you'll see a lot of hyperbaric chambers out in the market. It's very important to make sure you're using an FDA clear chamber.

So there are a few individuals that have FDA clear chambers on the market. The FDA clearance just gives the physician or the patient reassurance that the device was constructed with proper guidelines.

All the materials were tested to ensure that they're non-toxic. That's a big one. I, you know, we've actually received phone calls from patients asking us different questions because we are seen as the industry leader and the experts in this space asking why they're not responding well to the therapy or there was actually a patient that had a hyperactive immune system and their symptoms got worse when they started.

And in conversation, we found out that they were using a non-FDA chamber and that non-FDA chamber was actually off gassing certain things under pressure to the patient, which was then hyper, you know, furthering their hyperactive immune system, which can be very scary, right?

Pressure is very scary, especially if you're not breathing clean air or you're breathing in toxins that are raining op gas from the materials you're surrounded with.

Now imagine just diffusing those toxins, right? And yeah, that's terrible. So in addition to the FDA clearance and using non-toxic materials, how else does OxyHealth differ from other HBOT manufacturers?

Of course. Well, we've built in a multitude of safeguards around our products. So we built in things to like fail safe, if you will. So there's fail safe built into the compressor, there's fail safe built into the chamber itself, multiple, just to make sure that in the event something goes wrong, whether there's a power outage, or let's say a valve goes out on the chamber itself, that the chamber will be safe.

You know, we pride ourselves on not only the quality of our product, but our safety record. We've been in business for 27 years, we have well over 18,500 chambers in the market today, and we've had zero incidents.

So we like to pride ourselves really on the safety of our products and being the industry leaders and knowing that confidently that our products are safe and that we can empower physicians to safely use the therapy as well as give patients the peace of mind, whether it's they themselves going in or a child that they're putting inside of their hyperbaric chamber, that it is safe.

It's constructed with proper manufacturing processes. It's gone through a boatload of safety testing. I think we have over 50 tests in our internal testing to make sure that this device is safe.

And if it fails, we've studied every aspect of how it will fail and have really engineered these to prevent that from happening. That's amazing. And those are great numbers.

I mean, I challenge that there's really any other company out there that can say that. We're the largest and we have the most safety data to really show what my father has accomplished over the past almost 30 years now.

That's amazing. So are there any contraindications, safety concerns, or patient populations that should approach an HBOT with caution or are strictly contraindicated?

Yeah, there's actually one absolute contraindication and that's having an untreated pneumothorax. So having a sack of air in your lungs, as you can imagine, it's not the best idea to go inside of a vessel that's going to go through different pressure changes.

Outside of that, there aren't any absolute contraindications, but there is a long list of relative contraindications. So, for example, one of the relative contraindications would be pregnancy, for example, right?

It's not because it's not suitable for a patient who's pregnant, but because they're generally high risk. This is a therapy that needs to be researched a bit more before a patient can actually go on if they are pregnant.

If you have COPD, for example, right? Doesn't mean all patients with COPD are contraindicated. It's a relative contraindication. But if you're at one of the later stages of COPD and have CO2 retention, it's not the best idea to go inside of an environment that's saturated with oxygen when your internal, you know, because with CO2 retention, for example, because you have CO2 retention, your respiratory rate is now based off of the oxygen that's exposed rather than the CO2.

So if you go inside of a hyperbaric chamber, You're tricking your body into thinking there's a lot more oxygen than there is, and that could affect your respiratory rate and end in some pretty severe complications.

And so there's a long list. There's like 40 to 50 relative contraindications. We provide online trainings to physicians, especially, and patients to kind of get exposed to what these are.

To really make sure that you're a candidate for hyperbarics, always check with your physician. You know, individuals will call us all the time asking for guidance and we'll connect them with some of the industry leading physicians in this space just to make sure that they are properly looked after and they have a full workup and to ensure that they are a candidate for something like hyperbaric therapy.

Yeah, it's definitely, you know, I would say beyond worth it just to make sure that you're not going to have any complications from it. And then everyone has peace of mind, you know, including yourself going in there.

So let's talk a little bit more about accessibility. So how realistic is it, do you think, for patients to have HBOT at home? And what are some of the models that OxyHealth has that would make that possible?

Of course, it's a lot more realistic than people think. For the longest time, it was really cash paid. This isn't something that insurance covers, but we have built programs over the years to make this more accessible.

We, for example, and I'm not sure if other companies do this, but we do have like a rent to own model. So we actually allow patients and physicians to rent it for a three month period and then make a decision to actually purchase it.

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And every dollar they spend along the way goes towards the actual buyout. And so this gives patients and doctors a chance to actually trial this to see if it's a good fit for them before they make that investment and taking on something like Hyperbarics and bring it into your home or practice.

And now we actually have third party financing. So for the longest time, we didn't have consumer financing. In the last year and a half, I have secured an agreement with an institution that's willing to do consumer financing, which if you know anything about medical devices, especially prescription medical devices with higher ticket items, it is very difficult to get consumer financing in today's world.

So we have consumer financing options. And of course, if you're an individual with a business, we do have B2B

financing options as well, just to help make it more accessible and, you know, make this more of a reality and putting one in your home.

Now with that said, what we're actively working on is pushing research in hyperbarics because, you know, coming from the pharmacy world, everything that's insurance based has a boatload of research behind it.

And so it's one of my missions to push as much research as possible to bring more education awareness around hyperbarics and one day get more indication approvals around hyperbarics so we can finally have insurance to cover something like a home hyperbaric chamber.

That's great. I hope that you succeed with that mission. I hope I succeed. It'll be a while. I don't expect that to happen in the next five years, but I do think it can be a reality in the next five to 10 years.

Yeah, that's amazing. So let's talk a little bit about kids. We haven't really touched on kiddos and how wonderful HBOT is for them, you know, in a plethora of different illnesses.

So have you seen HBOT use successfully in pediatric Lyme, Pants Pandas, or other neuroimmune cases? And what special considerations apply to kids in HBOT?

Yeah, of course. We actually have seen hyperbarics used for a lot of pediatrics, specifically Lyme and PANS. They respond well from what we've seen in a lot of the physicians that we work with.

They're experiencing improvements in cognitive function, reduced anxiety, behavioral stability, and decreased inflammation markers, all things that are contributing to some of the symptoms that presenting with.

And with children, it's very important to take a gentle approach. Children can be a bit more sensitive to oxygen, so for children specifically, you'll typically see a protocol range between 1.3 atmospheres and 2 atmospheres.

And the reason for that is starting them low and slow to see how they respond to the therapy because there is an unknown on how sensitive they are to oxygen, especially if they have some kind of neurological injury.

And so it's a non-invasive but safe therapy overall. But it's very important that if you're using hyperbarics for pediatrics to consult with a holistic or functional medicine pediatric doctor, one that's experienced in hyperbarics and one that's actually worked with quite a few patients over their time to really make sure that they're using it safely and that your children are under the best care possible.

We, of course, work with quite a few pediatricians in this space. So I always encourage individuals, if you're looking for a pediatric doctor, to contact us.

And, you know, we're more than happy to put individuals in touch with some of these pediatricians that we know and trust in this space. That would be great.

And so, yeah, so reaching out to OxyHealth directly or another wonderful resource is the Medical Academy of Pediatric Special Needs or MAPS. And so, again, you can reach out to them at medmaps.org.

All right. Well, thank you so much for being here. Yeah. Thank you for having me. It was such a pleasure. Absolutely. Any parting words of advice you'd like to leave our listeners with?

I would like to say that… You know, we're currently going through a huge shift in this industry with different things going on in politics and some of the individuals that are leading healthcare.

And I do think that the door is going to be held open for a lot of functional approaches and specifically holistic modalities like hyperbaric. If you don't know anything about hyperbarics or if you are working with a physician that's interested in hyperbarics, encourage them to go to conferences like LymeBytes.

Encourage them to go to conferences like the Medical Academy and Pediatrics, the Special Needs, because there are a lot of individuals who can be helped by something like hyperbarics.

It's really up to the masses to stimulate that awareness and stimulate that interest, especially on a physician level, so we can go where we need to go and we can help touch a lot more lives at something like hyperbarics and all the other modalities you see in this space.

So Mair, you and Oxi Health have been one of my biggest supporters with the Lime Bites Symposium. You've been there year after year. What keeps you coming back?

the community. I will say LimeBites is a very, it's a very special community in our hearts. And, you know, I love standing by organizations that are mission, vision, value driven.

And I think what you're doing is amazing. Putting on these educational tracks for physicians in a space where there really isn't much education around a lot of these functional approaches.

And so. We keep coming back because we're here to support the community. And really, I think Lyme Bites plays a very large role in moving the needle for advancing research in Lyme disease and really getting the word out to a lot of physicians on what they can do to help their patients.

Yeah. Thank you. Well, thank you. All right. And so to our listeners, we have Dr. Jason Sonners, who is going to be speaking at the Lime Bytes Symposium in November in Fort Lauderdale.

And he's going to actually be going over more of the physiology, the technology, some studies, things that he has found in his research and practice. So you can join in virtually from anywhere or you can come down to the symposium in person.

And again, that's November 14th and 15th. All right. Thanks for listening to Lime Bytes. We hope this brought you one step closer to true healing. If it helped you, share it with someone who needs to hear this too, because together we all heal stronger.

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