



#### **S4. Ep7 Cannabis's Future is Bright!**

Kara Ware:

We made it Nathan, our final episode.

Nathan Morris:

Woo-hoo.

Kara Ware:

Oh my gosh, we started this season by looking at the origins of cannabis in the United States. We discovered the source of our prejudice towards cannabis and discussed whether or not it's warranted. Then we learned about the endocannabinoid system and how to affect it, both with and without cannabis.

We acknowledge that cannabis is not a panacea and can cause harm, especially in certain populations like teenagers, pregnant women, and patients with personality disorders.

Finally, we explored the pharmaceutical and botanical cannabis products on the market and gave some general advice for how to use them.

Nathan Morris:

Whew, Kara, the topic of cannabis is so vast and how little did we know how vast it was until we got started? But we really covered a lot this season and if you're new to our show, we write and we produce these seasons as mini audio courses, and so each episode builds upon the last and they all lead us here to this, our final episode.

Kara Ware):

So We are on the precipice of change in the United States. Over a dozen cannabis related bills are in congress and public opinion is widely in favor of legalizing cannabis. So in this final episode, we'd like to talk to you about the future of cannabis and more specifically, the future of cannabis research, products and medicine.

Kara Ware:

Hello and welcome. I'm Kara Ware, a national board certified health coach and business advisor.



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Nathan Morris:

And I'm Nathan Morris, a certified functional medicine doctor.

Kara Ware:

Before we can talk about the future of cannabis, let's start with the current state of policy, because that's really what dictates so much of cannabis's future. At the time of recording this, cannabis is still illegal, still classified, as a schedule 1 drug. That's despite the majority of Americans, some polls indicating up to 90%, being in favor of some form of cannabis legalization.

Kara Ware:

But the good news is that Congress is looking into various propositions, which could have huge repercussions for the future. Many of these bills aim to reclassify cannabis, so it's no longer a schedule 1 drug. Allow farmers and researchers more opportunities to grow and research cannabis and establish a process for expunging convictions, reducing sentences and allocating funds to support communities impacted by the war on drugs.

Kara Ware:

I'd like to pause here for a second, because it is important to remember that hundreds of thousands of Americans are still imprisoned for cannabis in the United States, including those who have been sitting in a cell for years, possibly decades, for nonviolent cannabis crimes.

Nathan Morris:

Yeah, it's just so hard to believe Kara. So hard to believe. And there's a lot in motion right now and it's hard to predict what will happen.

**Ideally, researchers and lawmakers will work together, this time, and learn from past mistakes and we know our politicians are really great at learning from past mistakes,** to help guide us through legalization and regulation. If you want to stay up to date on cannabis policies in the United States, we recommend checking out the marijuana policy project at [mpp.org](http://mpp.org). There's a link in our show notes to learn more.

Kara Ware:

Whether or not cannabis becomes federally legal, progress will continue to be made in areas of research and products and medicine. So coming up, we're going to dive into each of those three areas to give you a sense for what's on the horizon of the cannabis industry.



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Nathan Morris:

Okay, let's start with the future of cannabis research. We know from episodes three and five, that very little research has been done on cannabis because of its classification as a schedule 1 drug.

Kara Ware:

Despite all the regulations and obstacles of studying cannabis, more research is being done now than ever before. In fact, in the past 20 years, there's been an increase of over 1300% in the number of publications on cannabis and marijuana.

In 2021 alone, researchers published more than 3,600 peer reviewed scientific papers on cannabis. And at the time of this recording, there are 224 active clinical trials involving cannabis. So there is finally a lot of money being directed towards cannabis research in the United States.

Up until now, cannabis research has largely been done in other countries. So whether it's legalized or not in the coming years, this wave of new research is going to tell us a lot about the use and, also probably, the potential downsides of cannabis.

Nathan Morris:

So to stay up to date on all this forthcoming research, I love PubMed and it's an unbeatable resource, but there are a couple others to check out too, that are a little more focused. The first is the International Association for Cannabinoid Medicine, which publishes the journal, The Cannabis and Cannabinoid Research Journal. Another great resource is the Multidisciplinary Center for Cannabinoid Research or MCCR, at the Hebrew University School of Pharmacy. This is one of the few centers in the world that is conducting research on cannabinoids, endocannabinoids and medical cannabis. And of course we'll link to you all of these resources in our show notes.

Nathan Morris:

Now, Kara, I am super excited about this upcoming research, but you know me, I'm a little bit of a genetics nerd at heart, so my favorite developments will always be genetic. Of course our writing team made me limit this section on genetics to save time, those butt heads, but I'd like to quickly note that nothing in medicine is truly one fits all, which is what's interesting about genetics and the way that genetics may be affecting people's response to cannabis. So there are a couple polymorphisms I usually check when cannabis is involved, so check out our show notes for a little bit more on the role of genetics in cannabis.



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Kara Ware:

So, to summarize, a new wave of cannabis research is on the horizon. This has, in part, been facilitated by changes in legislation and funding that allow scientists to more easily study this plant. But a lot of research was also done, despite the regulatory challenges and so props to those scientists around the world like Dr. Ethan Russo, who's been fighting the bureaucracy to study cannabis for more than 26 years, so we will hear more from Dr. Russo later in the episode.

Nathan Morris:

And of course, all of this research is going to heavily influence the future of cannabis products, which we'll talk about next.

Kara Ware:

All right, Nathan, let's talk about the future of products. In addition to being a genetics nerd-

Nathan Morris:

Yes.

Kara Ware:

... you have been following the cannabis industry for years and even more so since we started the season, so I want to start with you. What do you think the future of the cannabis industry will look like? What products do you think we can expect to see?

Nathan Morris:

You know Kara, that's a great question and on the recreational side, I think we'll continue to see more and more wacky products, almost a Willy Wonka of products, if you will. Like cannabis infused tater chips and peanut butter, honestly Kara, whatever happened to just smoking a joint, but that's behind us now. We have sodas and whatnot.

Nathan Morris:

But with all this research coming out, we're bound to see new advances in therapeutic options as well, which is what I'm really excited about. And more specifically, I think we can expect to see products with a researched based ratios, a CBD to THC, so we're not really making guesses on how much CBD to THC, we'll have data to support that. And then we'll have standardized amounts of the lesser known cannabinoids, which we'll talk about a little bit later and terpene profiles. You know Kara and this is where I really get excited is the terpenes and how they're intended for particular therapeutic applications, based on how those terpenes are put together.



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Nathan Morris:

So, let's unpack each of these just a little bit more.

In episode five, I mentioned that my preferred ratio CBD to THC is 10 to 1 for oral therapeutics. This is not based on any research. This is just what I've found to be effective, because I don't have research I can go, "Oh 10 to 1 is the way to go with this particular issue."

So, while this ratio is not causing a high, it is very helpful for many of my patients, but as you know Kara, and as you'll share, this ratio is always the best fit. So as the research progresses, we'll begin to understand how to tailor the ratio of CBD and THC to the needs of the patient and their particular issues.

Kara Ware:

Right. That 10 to 1, I think is a really safe place to start Nathan, right?

Nathan Morris:

Yeah. That's true. That's what I went for, yeah.

Kara Ware:

Yeah. It's a really good place to start and so my mom, she has suffered from chronic back pain most of her adult life and has always been afraid of cannabis. Ironically, until she listened to our two part history in episodes one and two. I've begged her, "Please. I know you're terrified, but just listen to why you're terrified, right, in those historical episodes."

Kara Ware:

And you know, she has been on many prescription medications and has done invasive pain management procedures. The latest one they recommended had the side effect of paralysis. That was another reason why she opened to cannabis therapeutics-

Nathan Morris:

Yeah, cannabis doesn't cause paralysis.

Kara Ware:

... because nothing has worked. Yeah, it doesn't cause paralysis.



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Nathan Morris:

Well, short again.

Kara Ware:

I get that, because that risk benefit analysis we talk about in episode four.

Nathan Morris:

Yeah.

Kara Ware:

Exactly, right. So I started her, well, I mean, we went to the dispensary and we spoke to the bud tenders and we all agreed, "Okay, well, let's start with a safe 10 to 1 ratio, 10 CBD to 1 THC." She did not like that feeling of high CBD, low THC at all. And so we slowly increased the amount of THC and she is now taking a much larger amount of THC than I would have ever thought she needed. So right now she is actually micro dosing throughout the day for a total of 40 milligrams.

Kara Ware:

So she takes a 40 milligram gummy and cuts it in eighths throughout the day, and then she's also on CBD supplements. But she actually has found some relief for the first time, and now we're going to add in the transdermal cream next, but just one thing at a time, right?

So, the point of all of this is that everyone is different and different conditions require different approach. And so hopefully cannabis research will help us have a better sense for how to dose cannabis and the ideal ratio for each condition. Until then, as always, we recommend starting low and going slow.

Nathan Morris:

And Kara I'd like to add a little caveat here. You had mentioned to me in the past that y'all had checked it out with her chronic pain doctor and he agreed with this, but a lot of chronic pain doctors actually will kick patients out of the practice for having cannabinoids in their system, which is ironic to me because they need less opiates per my experience when they are on cannabinoids. So it's just something, it's still a tricky business, so always if you're having a patient try these things, make sure it's okay with their chronic pain doctor.

Kara Ware :

I'm glad you said that Nathan, because one of the dispensaries here in Ohio allowed me to speak to a pharmacist to help know where to start and what products are right for her. And I asked him, "What



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have you been most surprised about since getting into cannabis therapeutics?" And he said he was most surprised at how many patients are kicked out of pain management clinics-

Nathan Morris:

Yeah, that goes back into some of the prejudice that we see. We'll spend the whole episode on that Kara, it's a fascinating topic, but let's talk a little bit about THC and CBD and how they get all the love, but we know there are hundreds of cannabinoids and terpenes in cannabis.

One cannabinoid that I'm excited about is cannabigerol or... Well, hell I can't say it. I'd like just say, "Can of beer y'all," and really the best thing to think about is, we just call it CBG for short.

Kara Ware:

So CBG, let's go with that. I talked to Dr. Ethan Russo, a board certified neurologist who's worked in the cannabis industry for decades. In fact, he was a part of the first human study on CBG.

Dr. Ethan Russo:

I'm really pleased to say this past year, in 2021, we published the first big study of human use of CBG. Now, I've known about cannabigerol for a long time and actually were plants dating from the early 2000s that only made CBG and none of the other cannabinoids, but they really weren't in circulation to any degree and not in clinical development.

But we knew from basic science that this is a very promising molecule. In animal testing, it showed evidence of being anti-anxiety, antidepressant. There was also work in the lab to show that it could be used to target prostate cancer, for example. Working on a thing called the TRPM8 receptor. Also, about 15 years ago, it was shown that CBG has a very powerful antibiotic effect, even against things like methicillin-resistant staphylococcus aureus that's caused so many hospital-based infections. So I knew this had great promise.

In the last few years, particularly in the area where I live in the Pacific Northwest, there have been CBG plants become more widely available. So we did a survey and got 127 people who were using products that were at least 50% CBG. We didn't want products where there was just a touch of CBG and where you couldn't tell what it was really doing, and queried people about what happened with it. And the results were pretty surprising.

People were using it for a wide range of conditions, especially for pain, sleep, and anxiety, but also clinical conditions, inflammatory bowel disorders. People were reporting everything you'd want to hear that these were very effective. Often, in most instances, more effective than conventional medicines for



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the same problems that were attempted and with very few side effects, no evidence of withdrawal effects when they were stopped.

This is kind of baseline information that you need before you could get into a formal clinical development with the FDA. The first thing they're going to say about any new particularly botanical plant-based product is, what evidence do you have that people have used this and it was safe? Now, at least, we have a foundation upon which to build. So I think CBG has great promise and it's something we're incorporating in neuro-formulations now where they're allowed.

Kara Ware:

I can hear that's something you're really excited about for the future as CBG kind of joins its more famous cousins of THC and CBD.

Dr. Ethan Russo:

Exactly.

Kara Ware:

We included a link in our show notes to Dr. Russo's observational CBG study.

Nathan Morris:

And you can already buy products with standardized amounts of CBG. I'll sometimes recommend this to patients with GI or neurological issues as the research tends to support that. And Panacea Life offers a product with CBG and full disclosure here, I am now due to this podcast and me doing research and talking to people, I'm on the scientific board of Panacea Life. Also, Weedmaps also allows you to filter for products that contain CBG and other cannabinoids.

Kara Ware:

Right, and CBG isn't the only ingredient with promise. Recently, a lot of attention has been given to terpenes and their effects on the body, like you said earlier.

Nathan Morris:

Woo-hoo, we're talking about terpenes, Kara. This is where I really get excited. So the terpene content of cannabis is super important and this season we learn that it's really terpenes that are responsible for the sedating or energizing effects of cannabis. Not the different strains per se, indica or sativa, as everyone originally thought.





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Kara Ware:

Yeah, Nathan, so many of our guests this season all agree that terpenes play a vital role in creating products with specific therapeutic applications. And we talked about terpenes and the entourage effect in episode three, so check that out to learn more.

Nathan Morris:

Last year I took a tour at Ally Feiler's dispensary, Green Tree Medicinals located in Boulder, Colorado where Ally grows and sells her own cannabis and cannabis products. One of the most impressive parts of her interview was when she shared what she was working on for the future.

Ally Feller: I've been doing this since 2009, and I'm actually a cancer survivor and a, uh, entrepreneur. So, between those two skill sets combined, I've been very passionate about cannabis for a very long time.

I saw it help a lot of people before it was accessible and I made it my mission to help make it accessible to as many people as possible in a safe way. Uh, one of the things I love about our brand is that we're all about consistency, which is obviously very apparent in the pharmaceutical world and in the medical world, there's really high standards, but in the cannabis industry, there hasn't always been these high standards.

And so I worked very diligently on developing a brand that was based on. Basically a consistent effect and we actually have seven different lines in our product line that range from energized, relaxed to sleep. We have a focus line, a pleasure line, a pure CBD line.

And then we have a relief line for heavy pain. So we're able to actually target people's real needs instead of going into a dispensary and people saying, you know, I want something for this. And the budtender, having to guess about what the product is, we're able to actually have that pre delineated for them.

Now our product line is really unique because we spent a couple of years developing a terpene rich formula for each of our effects. So we actually add a proprietary blend of terpenes to each one of those.

So for pleasure, or for, for relaxation or focus, we've created this. And so we do actually know exactly what terpenes are in, what concentrations are going into each one of our green treats products. So that's another unique component to our brand. It's very rare. And most companies don't do that.

Nathan Morris:



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So, THC and CBD aren't going anywhere, but the future of cannabis products will likely be centered around terpenes and lesser-known cannabinoids like CBG and how they combine with THC, CBD and it's just going to be really neat to see how these all interconnect.

Kara Ware:

And remember, of course the science is still young, and cannabis will only ever be just another tool in the functional medicine toolbox. So fancy marketing and ads will tell you that cannabis products are a magic bullet, capable of fixing all your problems. And we know that is not exactly true, so continue to educate yourself on emerging research to determine which products will be most appropriate for you to recommend.

Nathan Morris:

You know, while we're on the topic of future products, it is worth mentioning that in December of 2021, the pharmaceutical company Pfizer spent \$6.7 billion, billion to acquire Arena Pharmaceuticals, a company working on cannabinoid-based treatment for GI disorders.

Kara Ware:

Not only is this big news today, but if you think back to what we learned, again in episode one, Pfizer, which was originally Parke-Davis back in the thirties, was actually one of the original manufacturers of therapeutic cannabis products. So in a way it is like they're getting back to their roots.

Nathan Morris:

Yeah, they are definitely betting on the future of cannabis though.

Kara Ware:

So, Nathan, with a flood of new research on the horizon and new and improved products coming out every day, will cannabis become part of mainstream medicine?

Nathan Morris:

You know Kara, that's a hard question to answer. It's such a long road for any new intervention to become part of the mainstream and we can just look at functional medicine. That's a great example and cannabis has some extra big hurdles to overcome and it probably won't come as much of a surprise, but the American Medical Association, or AMA, which guides medical practices in the US has not given the green light to use cannabis in a medical practice.



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Nathan Morris:

The formal stance of the AMA is, "Our AMA does not support legalization of cannabis for adult use, until additional scientific research has been completed to fully document the public health, medical and economic consequences for its use." I'm not sure they really sound like that Kara, but I thought it sounded fitting.

Kara Ware:

Very official.

Nathan Morris:

Official.

Kara Ware:

But let's be clear here. Let's give them some credit. The AMA is not against cannabis, they're just worried about the lack of research. And the good news is that the AMA is in favor of making it easier to research cannabis. In fact, they've actively supported the Cannabidiol and Marijuana Research Expansion Act, which would make it easier to study CBD and other cannabis products, expedite medical treatments and establish legal protections for talking to patients about cannabis use.

Nathan Morris:

While the Cannabidiol and Marijuana Research Expansion Act and other similar bills have not been passed yet, it's a good sign that leading medical and government institutions are in favor of exploring what this plant has to offer, so go AMA. That's great.

Kara Ware:

While we're waiting on the AMA, and the research to catch up, colleges are launching cannabis centric courses to train the next generation of industry leaders. There are now programs and degrees on cannabis chemistry, biology and even production, business and law.

Nathan Morris:

Yes, like Colorado State University in my own state, offers a Bachelor's of Science in Cannabis, Biology and Chemistry. And on the other side of the country, the University of Vermont is the first medical school in the nation to offer a professional certificate in cannabis and medicine for therapeutic use. And the American Cannabis Nurses Association offers CEUs to nurses through its online cannabis curriculum. So for links to these, and other cannabis education programs in the US, see our show notes.



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Kara Ware:

These educational programs are important because future careers will be built around cannabis.

Nathan Morris:

Yeah, it's just wild how much the cannabis industry is growing. According to Forbes, "Lifting regulations on cannabis could help the country the way that ending prohibition helped the US out of The Great Depression." Forbes estimates that cannabis legalization could result in \$128.8 billion in tax revenue and an estimated 1.6 million new jobs in the US.

Kara Ware:

Wow. Let's just pause for a second.

Nathan Morris:

Yeah.

Kara Ware:

Let that sink in.

Nathan Morris:

That is awesome.

Kara Ware:

Alongside policy and research, education is a necessary and a driving force for cannabis adoption in mainstream medicine. The US is just getting started, but in Canada, cannabis became legal in 2018 and they've already begun integrating cannabis education into their medical training.

Kara Ware:

Cannabis education is becoming more common in hospitals and medical schools throughout Canada and this is in large part, thanks to Dr. Jennifer Anderson, a family physician who's leading the integration of cannabis education into mainstream medical curriculum for residents.

Kara Ware:

Dr. Jen explained to me how she started the medical education movement.



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Dr. Jennifer Anderson:

We started formulating the idea of integrating it into the family medicine curriculum in a way that when family docs graduate, they can have the conversation, whether or not they want to authorize it or not, they will have a basic education, they'll be able to refer to people like me who are comfortable with it and be able to collaborate.

And so when we had those conversations that inevitably turned to the med school to, well, all the physicians need to have this basic education, not just the family medicine residents and the family docs.

So, we're in conversations about the med school curriculum, we do have a few lectures that have been in the curriculum for a while, but we're just trying to figure out how to better integrate the core concepts and the physiology, the science of cannabis, and also just group discussion case studies, things like that.

**So it doesn't matter where physicians end up, whether they're in orthopedics or they're in pediatrics, they actually have some basic knowledge to help with their patients.**

Kara Ware:

This is where we started our season, hearing Dr. Jen echo our original thesis, which was, "Whether or not you intend to recommend cannabis in your practice, you should probably know about it."

Nathan Morris:

Amen.

Kara Ware:

And this was incredibly validating. To hear her full interview and learn more about how her son helped start this journey for her, keep an eye out for our bonus episode coming soon.

Nathan Morris:

And if you're interested in being part of the future of cannabis and medicine, there are tons of educational resources to check out like Dr. Janice Knox and well, the entire Knox family. They're at the forefront of therapeutic cannabis and we can't recommend them enough. Great people.

And another great resource is [TheAnswerPage.com](http://TheAnswerPage.com), which offers courses and other resources to help you learn more about cannabis. TheAnswerPage was developed by Dr. Meredith Fisher-Corn and her husband, Dr. Steven Corn, who are both Harvard trained medical doctors, specializing in pain. Dr. Corn has an additional specialty in opioids.



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Nathan Morris:

Finally, again, the University of Vermont has lots of great resources through their medical school and we'll have, of course, links to all of these resources in our show notes.

Kara Ware:

To bring our season to a close, let's quickly recap what we've covered and acknowledge how far our understanding has come. We started the season by looking at the origins of cannabis in the United States. We discovered that in the 1930s Harry Anslinger, desperate to hold onto his position as Director of the Department of Narcotics, turned public opinion against cannabis with yellow journalism and fear mongering.

Nathan Morris:

Anslinger took cannabis out of medicine and put it behind political bars, if you will, and despite resistance from the AMA and the New York Medical Society.

Kara Ware:

Anslinger's anti-cannabis rhetoric was furthered by Reagan and Nixon, when the infamous war on drugs caused more harm than the plant itself. Cannabis was sneakily classified as a schedule 1 drug during the Nixon administration, thereby removing it from research and medicinal use for decades.

Nathan Morris:

Despite the politics of the time, the endocannabinoid system was discovered, thanks to funding overseas, ironically. Since then, research has shown that this system is a master regulator. It's a volume knob for how we respond to stimuli. We want to help our ECS function optimally and we can do this with supplementation or lifestyle factors, but if we overpower it with strong or inappropriate products, we will only be a little bit more out of balance.

Kara Ware:

So, as we've discussed, cannabis isn't a panacea, nor is it harmless. It's vital that practitioners balance the pros and cons of cannabis, as they do with any intervention. And finally, while there are many cannabis products on the market, they aren't all created equal. Purity and potency vary widely. We recommend purchasing cannabis products from a reputable dispensary or supplement company and of course, starting with a low dose and making adjustments as needed.



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Kara Ware:

It took our team over nine months to research and write this season. Our goal was to share the background, science, products and promise of therapeutic cannabis and we hope these episodes have helped to get you started in your learning. Maybe it's even brought you from a place of prejudice to feeling ready and willing to talk about cannabis in your practice.

Nathan Morris:

Yeah, Kara. This season, I'm a little sad it's over. I mean, nine months, it's about time too.

Nathan Morris:

I'm so happy we covered this topic. I know it's impacted how I look at cannabis. Truly, the history was just fascinating and learning more about the endocannabinoid system. And as you know, one in five Americans are taking cannabis in some form, and so we need to be ready and informed to help guide them. And although, currently I'm not prescribing cannabis, it sure has been helpful in my practice because a lot of people are taking it when you ask them about it, to be able to give them some insight and talk about some of the things, besides just CBD and THC. To talk about the terpenes and CBG and how we should dose these things and honestly, be able to caution them and say, "Don't take these high doses, because you will have some problems there with... You're going to build up some resistance to cannabis," and so just helping them understand.

Nathan Morris):

Actually, being able to talk to my own kids about it and have the knowledge to say, "Hey, this is what the research shows." It's just been super powerful, so I couldn't be happier that we did the season.

Kara Ware:

What a season, oh my gosh. So thank you to all our listeners, to the many guests and experts who took the time to help us understand cannabis and the industry as a whole, and of course, to our writing and production team.

Nathan Morris:

Yeah. Kara, we sure couldn't do this alone. Big thank you to everyone with all sincerity. It's been amazing.



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Kara Ware:

So, this episode's show notes are jam packed, so be sure to check them out and until next season, be sure to check out our other seasons that we've written and produced, at Kara Ware Coaching. That's K-A-R-A W-A-R-E coaching.com. So thank you for listening.

Nathan Morris:

Yes. Thanks so much.