

Michelle Day: [00:00:00] Good afternoon everyone, and welcome to the Fletcher Group Rural Center of Excellence's webinar series. Today's session is scheduled to run from 2:00 PM to 3:00 PM Eastern Standard Time. My name is Michelle Day, and I am your moderator for the session, along with Janice Fulkerson and Erica Walker. A couple of brief housekeeping items, and then we'll begin.

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Be advised that this meeting is being recorded and will be available to you on our website once it has been transcribed. You can access our website at www.fletchergroup.org. Also, at the conclusion of today's session, [00:01:00] there will be a short survey regarding the webinar content. Your participation in that survey is greatly appreciated and will only take a few moments to complete.

Joining us today is Dr. Alex Elswick. Dr. Elswick is a tireless advocate for people who use drugs and people with substance use disorders. He currently serves at the University of Kentucky as an Assistant Extension Professor for Substance Use Prevention and Recovery. Alex is the co-founder of Voices of Hope, a non profit recovery community organization, and the co-founder of the UK Collegiate Recovery Community. He is a trained researcher and therapist, but most importantly, Alex is himself a person in long term recovery from the chronic disease of addiction. Alex, the floor is yours.

Dr. Alex Elswick: All right. Very cool. Um, I was just telling [00:02:00] our, uh, technical assistance team there that I've never seen the pre recorded video webinar like that. And I wasn't quite sure how it was going to work, but it turns out they know what they're doing because that worked really well. Yeah. Um, well, good afternoon and thank you all so much for joining.

Um, my name is Alex Elswick and, um, uh, as you've already heard, and I'll share with you some more, I wear a lot of different hats, but, um, and I get to do a lot of different kinds of presentations and webinars and seminars. And without a doubt, this is one of my favorites because it's, it's one of the most foundational and that doesn't mean it's simple or that it's easy. Um, Um, but it's, it's kind of, um, goes to the core of the work that we do every single day. I think it's the most instructive. And my hope is that you're going to leave this 1 hour webinar today, saying to yourself, I understand addiction better than I did an hour ago. And if you do that, then that's a pretty, pretty successful hour we've spent together.

Um, I, uh, I'm a person who I always tell folks, like, I'm fortunate [00:03:00] that I've had the, the opportunity to learn about drugs and the people who use drugs from lots of different experiences. So, I'm a trained marriage and family therapist, trained recovery coach, a trained researcher, um, you know, co-founder of Voices of Hope. We, we won't really have time for a shameless plug for Voices, but we're a recovery community organization, and all of our 100 staff are people in recovery who use that lived experience to help other people in recovery. And then, you know, my day job is at the University of Kentucky, where, um, I, my research

really focuses on long term recovery and where my job is not only to do primary research, but also to do what we call research translation, which is, in fact, exactly what we're doing right now today, when I translate research to you, all the practitioners who can use it and absorb it and put it into good effect.

Um, and so I hope that that's what we're going to be able to do today. Um, and while you learn different [00:04:00] things from clinical experience than you do from research than you do from on the ground service provision, and that's a really well rounded experience, um, without a doubt, the most significant experience I have is personal experience. And I always feel that I'd be remiss if I don't share a little bit of my personal experience. Uh, because research shows that that's the most effective way, uh, to reduce the stigma associated with with substance use disorder. Um, so a quick disclosure. I don't have any, um, financial disclosures. Our objectives for the day are kind of 4 fold for always at the forefront of my mind is reducing stigma.

And I think even for a lot of us who work in the space, who've been doing this for many years, we might kind of um, glaze over that and sort of have a sense like, well, I don't, you know, I work in the space, so I don't hold stigmatized views and nothing could be further from the truth. It turns out, um, all of us hold, hold, you know, unconscious bias about drugs and people who use drugs.[00:05:00] Um, and then we're going to identify salient risk factors and then spend the majority of our time really establishing addiction as a chronic disorder. I still hear so much of the debate about is addiction a disease? Is it a syndrome? Is it a whatever it is? Whatever it is, we know that it's, it causes chronic changes to the brain and, um, and we want to unpack those implications a little bit. And then identify some policies, practices and resources that are supportive.

So, uh, I want to make sure I don't get carried away here because, as I said, we've got so much that I want to get to, but, um, but, but I do want to share some experience. So I, I was born and raised in Lexington and, um, I was born to really privileged circumstances. And every time that I share my story, which is frankly a lot, um, I, I start there in the same place. And that's because, uh, not because I'm trying to virtue signal or because I'm trying to say, hey, I'm, I'm one of the good white people. Um, it's because it really mattered. It [00:06:00] mattered in terms of my addiction, and it really mattered when it came to my recovery. I grew up in the suburbs and went to private school and um, Dad's a doctor. Mom's an accountant. You know, nothing bad ever happened to me as a kid. I wasn't neglected or abused. My parents didn't use drugs. They didn't divorce. Um, but I, but I inherited some risk factors that I just, I didn't ask for that. I didn't invite to my doorstep that, that greatly increased my own individual risk of substance use disorder.

And, um, we'll talk about these in a, in a bit as well, but, but one of them is a genetic predisposition for addiction. So, my mom had, uh, seven uncles, and four of them had drug and alcohol problems. And so even though I didn't understand that when I was 13, when I was 26, and in graduate school, it was pretty clear to see that I was at elevated risk. And then secondly, um, from the time that I was pretty young, I've struggled with anxiety and I'll show you, I brought some pictures today because [00:07:00] that makes, makes it all better. And just so you know, if you're at home right now on your computer, laughing to yourself, it's totally acceptable to me. Um, that's, that's a really anxious Alex trying to find his way in the world at about probably 17 years old.

Um, I ended up being diagnosed with three different anxiety disorders. So, generalized anxiety disorder, social anxiety disorder, and trichotillomania, which is a hair pulling disorder. It, it, it, it disproportionately affects adolescent females. So usually you'll see 12 or 14 year old girls coping with anxiety in this maladaptive way, where they're sort of pulling out clumps of hair. For me, it was my eyebrows. I don't know why. But in seventh grade, I was so anxious doing schoolwork that I just kept pulling at my eyebrows to the point that I would physically sit on my hands and I would verbally say out loud, Alex, stop, and then 30 seconds later, I'd be pulling again, you know, and, and if we had more time, we would spend some time unpacking how process [00:08:00] addictions like trichotillomania are related to drug addictions and addictions of other kinds.

There's some interesting sort of neurological relationships, but that's the subject of another webinar another day. Um, so, you know, I have these anxiety disorders. I don't know what to do with it. My, my family's mental health literacy was pretty poor and I don't say that to be critical. It's just true. Instead of recognizing this as a mental health problem. My family, um, just sort of thought it was this weird idiosyncrasy, you know, this weird thing that Alex does, he pulls his hair out. And so nobody identified it as this really clear example of externalizing anxiety. And so I started looking for ways to cope with how I felt and, um, I played sports in high school and so I tried nicotine and that was really the gateway drug for me and I loved the way that nicotine made me feel and I didn't experience any negative consequences.

My, my lips didn't fall off and the police didn't [00:09:00] arrest me and my mom didn't find out. Um, and I caught a buzz and probably a little bit of a bigger buzz than most of my peers because of my risk factors. And, um, um, and I liked the way it made me feel, and so then I tried alcohol, which I've never loved, but then I tried cannabis, which I fell in love with. Because for, for want of some real clinical intervention, in cannabis I found something that felt like a medication. Subjectively, it felt like it was making my anxiety dissipate. Now, I've grown to be able to acknowledge um, you know, in recovery that certainly cannabis, all of the research would suggest is going to exacerbate anxiety.

Um, and it's just the euphoria that you're feeling in the beginning that makes you feel subjectively like it might be treating your anxiety, but in any event, it felt like it was medication. It felt like it was medicine for a problem that I had, and I thought. You know, for better or for worse, I learned that I can take something from outside of my body, and I can put it in my body, and I can manage the way that I [00:10:00] feel. And I think, to me, that was the most profound crossroads. You know, drugs weren't, cannabis wasn't a gateway in any other sense, other than it was a realization that I can control the way I feel. And that was powerful. That was like, it's like a window into a whole new world. And, um, so I started experimenting, and I went to college to play baseball, And, um, started smoking so much weed in college, so much more cannabis than even your average, you know, just hard partier.

It was pathological from the beginning. And I started running out of money, so I decided to start selling cannabis as a way to, um, to sort of afford what I was doing. And on Valentine's Day 2010, I got pulled over because my brake light was out and I got arrested on a bunch of felony drug trafficking charges and, um, trafficking eight ounces to five pounds, trafficking within a thousand yards of a school, possession of a controlled substance, possession of paraphernalia, DUI. Went [00:11:00] to jail. Jail was rough. Uh, I got out of jail and, and got kicked off the baseball team and got kicked out of the college. I got put on probation. Um,

and about two months into probation, I had surgery to have my wisdom teeth removed and I got prescribed oxycodone. And, you know, I took it the way that it was prescribed, but it really didn't matter because not only did I already have a litany of risk factors in terms of my genetic predisposition and my co occurring mental health disorder, but I'd also just experienced something that you can liken to trauma.

I don't, I don't know how you want to characterize it, but, but getting arrested and having, ruining your future and experiencing a social death on campus and losing all your friends and losing the stability of academia and losing all of that at once is, was just a cesspool for me. And when, when somebody just kind of lobbed an opioid grenade into that, um, everything blew [00:12:00] up and you know, for the sake of time, I've already, I've already shared even more than I intended to. So I'll just say I, um, I, you know, addiction took me all the bad places that people go. And I went in and out of jail and in and out of treatment and in and out of, uh, in and out of treatment and in and out of treatment and in and out of treatment.

And, you know, it's really important to me every time that I share this with someone that they believe me when I say I was trying so hard to stop. And I think it's of all the misconceptions about addiction I think one of the, one of the worst, one of the most malicious and just awful is, is that people think that if you relapse, it's because you chose to use drugs again. And that just wasn't my experience. Over and over again. I went to treatment trying so hard to stop and over and over again, I got out and relapsed on the first day and I couldn't understand why. I really, genuinely couldn't understand why. And I'm devastating my family and I'm [00:13:00] disappointing everyone I love and I'm ruining my future.

I'm not choosing this. This is not what I want for myself, but I can't make it stop. And, um, I ended up through a long series of events that aren't necessarily relevant. Um, I ended up experiencing homelessness in Nashville, in Lexington, in Cincinnati, and finally in Dayton. This is the Highway 35 overpass that runs through downtown Dayton. I met, um, like a community of folks who, who use drugs, who are IV drug users, who, who were also experiencing homelessness, and they kind of showed me the ropes and showed me where to go to get a meal. And where to go to get a shower. And they told me about a Salvation Army, which is a homeless shelter there in Dayton on Apple street, if anybody's familiar.

And, um, the first 30 days that I spent at the Salvation Army are the worst 30 days of my whole life. And I'm telling you that for really intentionally. [00:14:00] For a deliberate reason, um, I want to share some of the neuroscience behind that in a little bit, but I was so miserable. And, um, and, and really slowly things started to change and I ended up spending 6 months at the Salvation Army and, um, You know, let me fast forward for a second to just tell you, a lot of times, one of the questions I get today when I tell people that I went to lots and lots of treatment centers is people say, well, what was it about the Salvation Army?

What was it about the last one that was so special that made it such a good treatment? And what's ironic is by kind of every objective measure, the Salvation Army doesn't, isn't nearly the quality of treatment of any of the treatment centers that I went to prior to that. You know, it's not; it doesn't use evidence-based interventions. It's kind of a shoestring nonprofit. So the answer isn't necessarily anything special about the Salvation Army. The answer is in short. A continuum of care. Um, and, [00:15:00] and as we're going to see, and as we get into some of

this science, addiction is a chronic disorder. These, these changes that occur in the brain are long term changes.

And that means that if your treatments, uh, are acute, if you're mismatching a chronic disease with an acute treatment, you have a problem. You have a big old egg that you're laying right there. And that's what happened to me over and over again. No one ever explained it to me that way. I had to kind of discover the science on my own, but what happened in the end, the reason the Salvation Army, I guess, was successful in some sense is because it was longer term treatment. And then secondly, because the day that I graduated the Salvation Army, I transitioned into an intensive outpatient program. So I had six months of inpatient treatment and then six weeks of intensive outpatient treatment to really help me step down from all that structure to an unstructured environment.

And, um, and then the day that I left the IOP and graduated that, I started working with a therapist individually on my anxiety. [00:16:00] Um, so I, you know, I, we, I didn't have the language for it and I didn't know that it's what I needed to do, but as a matter of luck, as a matter of privilege and happy accident, I stumbled and tripped and fell into a continuum of care. A continuum of care that matched the long term chronic nature of the changes in my brain. Um, and as a result, you know, um, I'm really proud to say that I've been in recovery for 10 years and my life continues to get better. Um, and, and it has everything to do with, um, with with 2 things starting to treat my chronic brain disease, like a chronic brain disease, which makes sense and then accessing recovery capital. And and recovery capital just describes all the resources that promote recovery.

It's really going to be more the subject of, uh, or the focus of our next webinar. If you join me. Um, but it turns out I had a lot of it. It turns out because I'm a privileged person. I [00:17:00] had a lot of help with housing and with employment and with education and with mental health services. And it's I could go down this list ad nauseum, you know. And there are all these little advantages that gave me a 2 percent advantage here and a 3 percent advantage there that really accumulated into distinct advantages over my peers in terms of my recovery. Um, I'm going to skip a couple pictures for you. Don't worry about them and just kind of dive right in. I tell people all the time, there is no subtle way for me to segue from sharing all the intimate details of my life to talking about addiction science. So we just do it. All right.

We just do it like, like Nike, we just do it. So, um, one of my favorite places to start this discussion is by telling people that drugs don't cause addiction. And for a lot of people, when the first time you hear that, that makes you go kind of cross eyed. Like what, well if drugs don't cause addiction, then what on earth causes addiction, right? Um, and as it turns out, and part of the case I want to make today is that addiction is not a drug problem, addiction is a [00:18:00] brain problem. And if you have a brain, you can become addicted, and you can become addicted to all sorts of things that aren't drugs. Um, and we'll make that case in a moment. But to begin, I use the example of Rat Park, which, if any of you all work in the space, you may have seen this example before.

Um, but I'm not sure if you've seen it connected to Lee Robbins research on Vietnam, so. Um, so stay with me. Um, researchers in the 1950s put rats in a cage and gave them two

sources of water. One was plain water, and one was water laced with morphine, and over and over again, the rats returned to the water laced with morphine, and they use it to the utter neglect of their basic needs. So they stop eating, they stop drinking, they stop mating, they stop interacting. All they want is the morphine water. And so they use it until they die. And for a short period of time, this becomes our really oversimplified model for understanding addiction. And we said, Hey, if you or I, just like the rat, if you were, I get exposed to an addictive substance like morphine, we're going to get addicted [00:19:00] to it and we're going to use it until we die.

Kind of an oversimplification though, because then about 20 years later, another team of researchers came along and they criticized that study and they said, Hey, that's cute, but that's not an accurate reflection of the way that people use drugs in the real world because in a cage, the rats don't have any attractive alternative to the drug. So they created what's called Rat Park, which is essentially like heaven for rats. You got toilet paper rolls to crawl on, uh, crawl through and, and hamster wheels to exercise on. And you're in this little, uh, thriving community with all your rat buddies. And then they replicate the study. They introduce the same two sources of water, but in the case of Rat Park, the results are completely and profoundly different.

None of the rats in Rat Park die, um, and most of the rats don't like the water laced with morphine, but those who do use it in moderation. Not a single rat in Rat Park dies, and listen to this, not a single [00:20:00] rat in Rat Park dies, despite the fact that the rats in Rat Park had freely available access to exactly the same drug in exactly the same dosages as the, as the rats in the cage. The thing that made the drug use in the cage so deadly, so harmful, it wasn't the morphine. The drug was the same in both contexts. The difference was the environment. The difference was the lack of interaction, the lack of attractive alternatives. And part of what this speaks to is the complexity of substance use and of addiction.

That so often we, we, we want to oversimplify it in our minds and we want to say this isn't a disease or it's a choice or it's a this or it's a that. And, um, we have to wade into the gray area because that nuance is, is really where we develop some understanding of, of what addiction is and what the implications are for recovery. But still people criticize that study. And they said, Hey, that's cute rat study, but we care about human beings. So how do we know that those results [00:21:00] apply to humans as well? And interestingly enough, Um, as I said before, Lee Robbins did some of this research on, you know, you know, in Vietnam, you had an entire cohort of soldiers go overseas and fight in really bad conditions, like just the, the, the, the living and combat conditions are just really awful.

And there are reports that come back to the White House that about 10 to 20 percent of actively deployed U. S. military in Vietnam are daily heroin users. And so you can imagine, like, the White House is freaking out. What's going to happen when the war ends and a fifth of our military comes home addicted? Well, instead, what happened was the war ended and the soldiers left that horrific environment and they came home stateside to You Know, uh, meaningful employment opportunities and thriving communities and loving families and the vast majority of those daily heroin users, like 97 percent of them, never touched heroin again.

And so this [00:22:00] belies the story that we like to tell about drugs as the cause of addiction. Drugs don't cause addiction. Addiction is a brain problem. And we'll, we'll really reinforce that case in a moment. But first, I want to run down some risk factors. I'm going to do this pretty quickly, so we can get to some other things.

But, um, and by no means are we able to run down an exhaustive list of risk factors because that list is a giant list, but some things that are risk factors for addiction really only represent a small amount of risk. So, for our purposes, we want to focus on the risk factors that contribute the greatest amount of risk. And without a doubt, the single greatest risk factor for addiction of any kind, not just substance addiction, but process addictions and addictions of all kinds, is genetics. And, um, one of the ways that we discover this, I'll spare you the explanation, but it's basically through twin studies, which allow us to use genetics and manipulate monozygotic twins versus dizygotic twins to compare rates of addiction. And we find that about half of the variance in [00:23:00] addiction is explained by genetics.

And that's just a fancy way of saying half of what causes addiction is genetic. And I bet all of you, maybe most of you on the webinar knew that, um, addiction runs in families, that there's an narratable component. But it's important to put that number into context because, um, breast cancer runs in families, for instance, and about 8 percent of the variance in breast cancer is explained by genetics. And in addiction, it's 50%. So more than five times, um, more genetic than breast cancer in that sense. And unfortunately, there's not a lot we can do to modify your genetics. You kind of are who you are. So, 1 of the biggest modifiable risk factors is mental health disorders. And, um, if we went into the general population, like, here in Lexington, where I am, for instance, and we surveyed folks, about 13 percent would say that they've had a problem with drugs or alcohol at some point in their life.

But if we went to your local hospital and surveyed folks who have serious mental illness, [00:24:00] or even just folks with, like, garden variety anxiety, depression, bipolar disorder, etc. Their rate of addiction is more than doubled to 27%. And so sometimes in the literature, this is called the self medication hypothesis. And it sounds super fancy, but really all it's, it's, it's kind of intuitive when you think about it. It's, it's, we're saying that we have so much untreated or undertreated mental health disorders in this country, that, um, that many, many people are self medicating and some people self medicate with Netflix and some people self medicate with Ben and Jerry's and some people self medicate with nicotine and cannabis and alcohol and whatever else.

The third major risk factor to kind of mention here is trauma. And I'm guessing that most of you also knew that there's a relationship between trauma and addiction, but here's what's interesting. In the scientific literature, the relationship between trauma and [00:25:00] substance use disorder is stronger than the relationship between obesity and diabetes. So they're very intricately linked. It's pretty rare in, in, in our work at Voices of Hope, especially working with, um, such a marginalized subset of the population. It's pretty exceedingly rare in our work that we come across folks who haven't been victims of some kind of trauma. And I put up, um, you know, the, the 10 ACES just as a reminder that trauma doesn't have to mean you got PTSD as a combat veteran.

And for a lot of us, I think we've, um, you know, kind of been misled to believe that trauma is not so much about the event as it is how you experience the event. So what's traumatic to 1 person may not be to another and vice versa. Um, I think that trauma is rampant among people who use drugs and rampantly untreated. And I think it's also rampant among youth and an obvious prevention opportunity for us. And then I've said, um, risk factor number 287, kind of tongue in [00:26:00] cheek here, just to make the point that there are actually lots and lots of risk factors, but we're just going to talk about these four. And we kind of already talked about environment when we talked about Rat Park, but if you wanted to set aside genetics, and, um, in statistics, we would say if you wanted to control for genetics and you want to isolate, what is the impact, the environmental impact of growing up in a home where my parents use drugs? Those kids are eight times more likely to develop a substance use disorder of their own.

Um, and so you really quickly, you can take all the risk factors that we've discussed, and you can imagine many of the others, I'm sure, um, and you can sort of index your risk. You can even use yourself as an example. It's kind of a helpful thought experiment to just consider what were your own risk factors, and how did those risk factors shape your experiences with drugs? And that seems like such a weird way to talk about drug use, but the reality is we all have different brains. So we're all experiencing the world around us differently, [00:27:00] and that's never more true than in the case of drug use. Um, you know, I, I've been using this example lately. I hope it's not offensive to anybody, but if we were to pass a joint around this virtual space, which we won't do, don't worry, but if we were to, we would not all experience it in the same way.

Right? Like some of us would get slap happy and silly and get the munchies and have a great time. Some people would get paranoid and have a really bad time. Some people might get very little effect whatsoever. And they'd say, what's the big deal about cannabis? Right? And, and what's the, the, the, the critical factor that's determining how people are experiencing those things is not their choices. It's not how much they smoked. It's not how often they chose to smoke. It's not the age at which they started smoking. It's, it's their risk, right? It's all these biological and environmental risk factors that they didn't ask for. Um, and so if you're somebody like me, the first time you use a drug, you get a disproportionate benefit.

And we're going to put some science behind that literally in just one second. But [00:28:00] when, when I smoked weed for the first time, I just got this overwhelming unnatural dopaminergic response. And that's part of the reason why I was at risk for addiction. So I love to show this slide because I know that most people who are basically my age or older will recognize this as a part of a really foolish anti drug PSA. Um, that's not your brain on drugs. That's an egg in a frying pan. We are going to do your brain on drugs. And I know that when I start putting up pictures of brains that people's eyes glaze over and they want to, you know, fall asleep.

Don't, because I'm only going to give you what you need to make sense of this. And, uh, and I know you can, so put your, this is so cheesy, but do it anyways. Uh, put, put your hand out in front of you like this. And tuck your thumb into your palm and wrap your four fingers around your thumb. All right, that's a little brain. You can put your brain down if you'd like. Um, if you talk to an evolutionary biologist who studies how this thing, this human brain

[00:29:00] has evolved throughout evolution, they'll tell you it's evolved inside out. So in other words, your four fingers there represent the cortices, which are the most highly and recently evolved parts of our brain.

It's the part of our brain that develops last. It's why those of you who have adolescent children, your kids make stupid, risky, impulsive decisions. It's not because they're stupid, thankfully. Um, it's because they're, they're all gas and no brakes basically, right? Like they're, they're, um, they're not functioning properly yet. And yet, if you peel back the layers of the cortices and you go more towards the middle of the brain, you know, you're going back through human evolution, back into these structures we share with other species, and you get to a part of the brain called the limbic system. And it's sometimes called survival circuitry, because the limbic system is the most closely associated circuit in the brain to our survival behaviors.

And in order to understand addiction, I think it's first really helpful to understand the brain and survival. So let me start there, and then we'll go to addiction. Um, think about any time you do [00:30:00] anything that confers evolutionary benefit, anything that makes it more likely that you're going to survive another day. So you drink water, you eat food, you have sex, you know, you try to reproduce, you, um, you bond with another human being. All of these behaviors are rewarded in this part of your brain and they're rewarded through the release of the neurotransmitter dopamine. And I'm guessing even though you aren't, you know, scientists that you've probably all heard of dopamine before in pop science.

It's kind of like, it's the feel good and motivational neurotransmitter. And so what your brain is trying to do is trying to reward you for helping yourself survive. And I like to think of this, my example for this is like potty training a dog, because I've got um, uh, a Cavapoo puppy named Bear. And every time that bear goes to the bathroom outside, you know that we hit the clicker and we throw him a treat and we say, That's a good boy! And why do we do that? It's because we're trying to condition that [00:31:00] response and reinforce that behavior. And in so many ways, it's like our brains are potty training us for survival. So I eat a bite of a banana and my brain goes, Oh, Alex, that's a good boy. And it throws me a dopamine treat, right? And then I wag my little tail and I go banana good.

And the next time I see banana, I eat banana. This fundamentally shapes survival behavior. It's a beautiful, elegant process of the brain, but it's really a nightmare in some sense, when it becomes compromised by chronic drug use. So, um, I'm going to describe this with kind of a rudimentary graph, which I realize is not, not always someone's favorite way to learn, but then I'm going to show you some pictures and neuroimaging and all kinds of cool stuff.

So let's imagine that we're looking at dopamine activity in the brain. So zero is no dopamine. That's abject misery. 10 is all the dopamine. It's the best you ever felt in your life. And a five is kind of like baseline. Right. It's just where I wake up in the morning. And I'm going to use myself as an example here. At 18 years [00:32:00] old, um, I got exposed to opioids and I experienced a huge unnatural dopaminergic response. Unnatural meaning that there's nothing that I can do in the natural world that's going to compete with this. No amount of water, no amount of sex, no amount of, uh, of food, of cookies, of donuts is going to precipitate the same.

And here's the reason that's so significant. To drive this point home. The highly evolved part of my brain probably recognizes that that drug I just used is just giving me a high. It's not actually important to survival. That's just a drug, right? But my limbic system has no way of understanding that because my limbic system only measures the world around it in terms of dopamine. And to my limbic system, more dopamine necessarily means that something must be more important to my survival. So the simple fact that the first time I took one of those pills and I got this huge dopaminergic response, my brain learned very early on, uh, that this is [00:33:00] important to my survival. Perhaps more important than food and water and bonding and sex, which is why people who are addicted will forego all of those things in pursuit of a drug, right?

It's on a survival basis. And another way of thinking about this is, um, I'll give you one more of my puppy dog analogies. Um, I have a bigger Cavapoo named Buddy, and I've been in my neighborhood for about two years. And I walk my dogs religiously every single day. And on like the second week that I was walking my dog in the neighborhood, a woman stopped me and asked if she could give my dog a treat. And I said, sure, of course. And so only one time in 700 some days has my dog gotten a treat there. But how many days would you guess of the 700 does he pull at the leash to try to get up to her front door? And the answer is every day. And it's a really cool example of salience, of my dog got such a big dopamine reward for it that he never forgot it. It made a mark on his brain. It was a really [00:34:00] salient mark on his brain. And now every time he approaches that house, he doesn't have to make a choice to get excited. He doesn't have to tell himself. Oh, yeah. Remember I like those things get excited, automatically, subconsciously he starts sweating, he starts getting excited, he starts breathing heavier, and he starts pulling for food. And in so many ways, that's, I think, a helpful analogy for thinking about the salience that's caused the first time a person uses drugs.

When they're just replete with risk factors, because the more risk factors you have, the more likely you are to really get some kind of benefit from the drug, or at least perceive some benefit. Which in turn makes you more likely to use again. But the effects of the drug wear off. They come down to baseline. You use again, you like the way that feels, but the effects of the drug wear off, you come down to baseline. All I've graphed for you here so far is drug use, not drug addiction. If generally speaking, if anybody uses a drug, this is effectively what happens in their brain. But then over time, what happens is your brain doesn't like all that volatility because your brain likes balance or [00:35:00] you know, homeostasis. And so what your brain does is it tries to compensate by the fancy term is down regulating dopamine, which just means it stops producing as much dopamine there. Fewer dopamine receptors are available to attach and sort of turn on dopamine. And as a result, the next time that a person uses, they still feel good, but they don't feel quite as good as they used to. And so when you talk to people with lived experience who talk about like chasing the dragon or chasing the first high, this is exactly what they're talking about. And it's not a psychological thing that lives in their head. It's a neurochemical reality.

They are actually not able to get the same high they used to get, and they haven't forgotten it. And now just as importantly, when the effects of this drug wear off, they don't just come back to baseline. You come back down slightly below baseline. And you don't have to be a neuroscientist of any kind to go, well, if dopamine is pleasure, then less than baseline dopamine is probably not good.

You know. It's associated with irritability and [00:36:00] discomfort and, um, depression and anxiety. And the problem with that is now you've got yet another motivation to use again. Not only do you feel really good when you use, not only are you getting a huge dopamine response, not only is your limbic system convinced that it's necessary for survival, so it's begun to prioritize it in your mind, but in addition to all that, now you feel bad when you don't have it. So simply put, it really creates this cycle of using and coming down and using and coming down. Days, weeks, months, years, until people reach a point where they have to use a drug to feel the way they used to feel. When they woke up in the morning and in end stage addiction, it's a special kind of misery.

And I alluded to this when I talked about my first 30 days in the Salvation Army. And I really regret that no one ever taught me this until I got into graduate school. I went to seven inpatient treatment centers and I never got a scientific explanation of my addiction that included the brain. And I feel like that's really a shame [00:37:00] because there's a lot of hope in it as I'll show you in a moment. These are really cool. These are called PET scans. These are, um, Positron Emission Tomography, ha, excuse me, Positron Emission Tomographies, um, they're a kind of neuroimaging that allow us to look at dopamine activity in the brain, specifically looking at the D2 dopamine receptor site, although that's not really pertinent. Um, the brain on the left is a healthy, normal brain, and the brain on the right is the brain of someone who's addicted to cocaine.

And what you notice here is this distinct, stark contrast between these two brains. So much more bioavailable dopamine or more dopamine receptor availability in the control brain. This is, this is what it looks like, this process that we just described with our graph. This is what it looks like at the end of that process. That's a brain that has no dopamine. That's a brain that it's not really motivated by food or sex or social interaction the way that it used to be, because it's now prioritizing cocaine. And we see this dopamine [00:38:00] downregulation phenomenon with cocaine. All of what are considered drugs of abuse. I kind of think that's a stigmatizing term, but that's what we tend to call them in the field.

Um, cocaine, methamphetamine, heroin, alcohol, nicotine, um, cannabis. You know, I, I do a lot of prevention work in Kentucky middle schools and high schools and kids everywhere swear to me that you can't get addicted to cannabis. And, um, you absolutely can. And you can look at, um, this kind of neuroimaging at PET scans of someone who has a cannabis use disorder, and it looks identical to all these other brains. The same process is happening. The drug doesn't matter so much. Obviously, drugs have different risk profiles and, and, and that sort of thing. But, um, in terms of the brain, dopamine is dopamine. And what's really interesting, as I mentioned before, that addiction is not a drug problem, that it's a brain problem is, we see these kinds of brain changes even when drugs are absent, but when some other [00:39:00] kind of substance or some other kind of stimulus is providing a spike in dopamine.

So that could be food, that could be pornography, that could be sex, that could, you know, we've legalized sports gambling in Kentucky. It definitely could be gambling, it could be all these sorts of things. What they do through repeated exposure. Is caused down regulation in the brain. And so what you're looking at here is another PET scan, but what's so fascinating is this is not a control versus an addicted brain.

Instead, this is a control versus someone whose BMI is considered obese. And, um, and what you notice is that the same phenomenon is happening here. It's, it's not as pronounced as in the case of cocaine, but something similar is happening here. And I think, I find that to be really interesting because of the similarities between obesity and addiction in terms of loss of control, in terms of the way that we stigmatize it, the way that we moralize it when we talk about it and say, if only you made better choices.

It's always about choices. If only you made better choices, which utterly [00:40:00] ignores the risk factors that lie at the heart of both addiction and obesity. Um, I probably don't need to say much about withdrawal symptoms because I would guess that most of you, uh, on the call are pretty familiar that in withdrawals, you experience the opposite of the effect of the drug. But, but the reason I put this on the screen is because I wanted you to see this last word on the screen, anhedonia. It's one of my favorite words in the English language. And means not, and hedonia means pleasure. So it means no pleasure. And it refers to a brain that's unable to experience pleasure. And that's exactly what this addicted brain is on the right.

That's, that's a picture. That's a brain scan of, of anhedonia. And so when I describe my first 30 days at the Salvation Army, um, that's, that's what I'm describing is the experience of anhedonia and the experience of not being able to experience, uh, any reward despite my best efforts. I can exercise, I can [00:41:00] meditate, I can make a friend, I can eat a nutritious meal. It just doesn't give you the same payoff when dopamine is downregulated that it does somebody else.

And so I think sometimes we make too big of, I think withdrawals get too much press sometimes. And what I mean by that is, uh, to the untrained eye, to, to people in the general public, there's kind of this misconception that withdrawals are the real driver of relapse. And certainly some people do relapse because of fear of withdrawal, but it's not. And I'm not necessarily speaking from a data based place on this, maybe more from my own experience, but, um, withdrawal was not the reason that I relapsed. Over and over and over again, I got through withdrawals because you kind of learn how to do it. You become a veteran of the game, right? I'm going to get Gatorade, and I'm going to get some Imodium, and I'm going to get some sweat rags.

And some DVDs back in the, that time for me, it was DVDs. And then a couple of days, uh, I'm going to sweat this out and it's going to be miserable. And I feel like I'm going to die, [00:42:00] but I'm not going to die. And it's going to be finite and it's going to end in four or five days. What always got me was what came next. And what comes next is this long period. The fancy term is called post acute withdrawal syndrome. So it's the syndrome that follows acute withdrawals. But, um, you don't have to learn anything new to understand pause because all that pause really is, is the syndrome that describes this process that we've been talking about all along of dopamine downregulation.

So here's the last brain scan I'm going to show you, but it's probably the most important of them all. Uh, in this case, we're looking at, um, people using methamphetamine, but again, it doesn't really matter. It's not about the drug. It's about the brain. Um, the brain on the far left is the healthy normal control brain. Probably what most of your all's brains look like. The brain in the middle looks identical to the addicted brain that I showed you before. Just for the

sake of comparison, let's go back for a second. Brain on the right there, addicted to cocaine. [00:43:00] Brain in the middle there, addicted to methamphetamine. But here's the difference, and here's the catch.

I've actually played a little bit of a trick on you. Um, that brain in the middle is not actually the brain of someone who's addicted. Instead, it's the brain of someone who was addicted, and now they're 30 days abstinent. So, for the sake of argument, we can imagine that that brain in the middle is actually the brain of someone who's just graduated a 30 day treatment center. And, um, by the way, what does the term graduation imply? It means you're finished, right? You're done. So, to tell people that they're graduating treatment in 30 days suggests to many of them that they've cured their disease and they're good to go. And yet you can look at that brain and with a really rudimentary understanding of the brain, you can look at that and go, something's very wrong here.

This brain is so depleted of dopamine. It's at, that's what risk of relapse looks like in a, in a PET scan. If you were to say what causes relapse, boom, I think of this middle brain every time. It's [00:44:00] anhedonia, it's misery, and it lasts a whole lot longer than 30 days. And so we have this wild problem, uh, with the addiction apparatus and the, and the addiction treatment apparatus, where we continue to treat this chronic disease of addiction on an acute basis. And then when people relapse, because of course they do, because their supports aren't in place for long enough to match their addiction, uh, we, we shame them. And we tell them it was their fault and that they chose drugs over their kids.

And it breaks my heart every single time because it's not true. So here's the hopeful part. I told you, I really wish someone had shown this to me when I was in treatment, because people said things to me like, Hang in there. And they said, don't give up five minutes before the miracle. And if you all, any of you are in recovery, you know, all the platitudes that people like to say, and it's not that those things are BS. It's not. It's that it's that they're platitudes and that I didn't know if I could believe them. If someone had shown me pet scans of a brain and shown me the way that dopamine [00:45:00] repairs on its own. Then I have reason to believe. I don't just have to have faith because now I have evidence, you know? Um, and, and what, what this shows is this is the brain on the far right is someone who was addicted to meth and now they're two years abstinent.

And, and what you notice is that brain looks an awful lot like the healthy control brain. That brain is really beginning to heal in a meaningful way. That, that, that brain's not compromised anymore. That person's regaining control over their faculties. Unlike the brain in the middle, which is just so, uh, you know, ripe for relapse. Like really, if we're being honest, um, for the sake of time, I'm going to have to skip the monkeys example. Sorry for that. Um, this just shows you, this is cool after having just seen the timetable in brain scans to look at it in data because they match up one to one. And so I think this helps make the point.

So what we're looking at here is recovery rates, not relapse rates. So this is the likelihood that a [00:46:00] person will. stay abstinent based on how long they've been abstinent. And for people who've been in recovery less than 12 months, only about 35 percent will maintain their recovery. And that means about 65 percent are going to relapse.

And, um, a lot of people look at that and say, well, that's awful. That's, that's really, um, a hopeless situation. And the reality is it's, it's totally consistent with the rates of recurrence that we see for all other chronic diseases, or I should say most other chronic diseases. Diabetes, hypertension, COPD, asthma, um, almost at least those disorders I just named all have rates of recurrence somewhere between 40 and 60%, which is roughly where um, rates of recurrence for addiction fall. And then, you know, your likelihood of maintaining recovery increases increases, excuse me, increases over time until you reach a point where somewhere between 3 and 5 years there's this plateau [00:47:00] effect where your risk kind of stays stable. And and, um, and that makes sense because that's the point at which your brain has really fully repaired from dopamine down regulation. If you like to think of it that way. Um, it takes time. And so the point here is even though prevention has a role to play and even though law enforcement has a role to play and even though primary treatment, both inpatient and outpatient, has a role to play, it's not the same thing as recovery.

And too often I think we think of treatment as the first line of defense and all the recovery stuff as an afterthought. And we've got it exactly backward. Recovery is where the focus needs to be. Treatment may or may not be a part of that. As it turns out, and we'll talk some more about this in the next webinar as well. The majority of people who are in recovery today in the United States got there without any formal help whatsoever. So treatment is certainly not the frontline defense for most people who are addicted in our communities. [00:48:00] Community based resources are. And I want to talk about what that looks like. Um. So the problem we have here is people get stuck in these cycles where they go to treatment and they, and they relapse and they go back to treatment and they relapse.

And, and, um, you know, they, they, they, they, they go to these 30 day treatment centers that are really, um, only intended to be a period of crisis stabilization. And that might be really useful. That's by the way, I'm not, I'm not criticizing 30 day treatment. It's a useful period of crisis stabilization. It's just not sufficient unto itself. And so you have people who are mismatching this chronic disease, um, with these, uh, you know, acute responses and, and leaving people hanging. Day 31, when somebody graduates from a treatment center, they're no longer under any kind of care, but they still very much have a brain that's been changed by their addiction.

So I always use my hands as an example to say, if addiction is a chronic disorder, Then we got to treat it like a chronic disorder. And so the question is, what does that mean? What [00:49:00] does it look like to treat addiction like a chronic disease? And I, I love to use the example of heart disease because it's a, um, a good analogy, and I have lots of risk factors for heart disease. My dad had a heart attack when I think six years ago, and it scared me to death. And we were actually playing basketball at, uh, 5:30 in the morning at Emmanuel Baptist, um, with a group of guys and, and my dad had a heart attack. So we rushed him to the hospital and put an emergency stent in and they saved his life.

And my dad's heart disease is a chronic heart disease. But the stent that they put into his heart is just an acute procedure. Now, it saved his life, which is good enough for me. And they could have wheeled him out the front door and I would have been happy. But that's not what happened. Instead, during the 72 hours that my dad was hospitalized, someone came to enroll him in, uh, eight weeks of cardiac rehab to strengthen his heart. And then two weeks after he [00:50:00] left, someone called to ensure he'd filled his prescriptions and hadn't had any

adverse reactions to his medications. Like a month after that, he had a follow up with a cardiologist and a month after that, a follow up with his primary care provider. Um, this isn't special. This isn't fancy.

This is kind of the standard of care. This is what we call chronic disease management. And it's because the hospital knows, or if you're a cynic like me, the insurance company knows, that it's better for their ROI. It's better for their bottom line because if they treat my dad's chronic heart disease on an acute basis, the data show that in all likelihood, he's going to return in 10 or 20 years with another heart related condition. And they're going to have to shell out another, however, you know, X number of dollars to pay for his treatment. And they don't want to do that. So instead, what's more cost effective for them. And as it happens more effective for my dad's health outcomes is to treat his chronic disease like a chronic disease and instead to do chronic disease management where he takes a medication, a statin or something every single day to control his [00:51:00] cholesterol.

He meets with a nutritionist, he's on an exercise program, all the things, right? And so the question is then what do those things look like for addiction? Because the answer can't just be treatment. Especially in light of what I told you a moment ago that most people won't even access treatment. So if treatment is our only hope, we're in trouble, folks. We gotta have resources that meet the needs of people. And those things are called recovery capital. And I'm getting close to my time here. I want to make sure I leave 5 or 10 for questions. So, I'm going to just do a really quick overview of this because we're essentially going to pick up, like, effectively on this slide when we start, um, in the next webinar.

So, I hope you can join us for that one to kind of, you know, this really focused more on what is addiction and in some ways, the next one will focus more on, um, what do people need for recovery? But something to contemplate in the meantime is I mentioned earlier this stuff called recovery capital and, um, you know, [00:52:00] recovery capital just refers to the resources that support recovery. Anything that makes it more likely that you're going to recover from your addiction, that's recovery capital. So, you know, you move from a halfway house to an individual apartment and that reduces your stress a little bit. That's recovery capital. Um, you know, you build a new social relationship that's supportive.

That's like an emotional bond. That's recovery capital, but it can also be a kind of tangible support because now maybe that friend can give you a ride to a meeting or connect you with a job, right? In that way that, right. That social relationships become a kind of currency that we can leverage. And so what Recovery Capital does is it helps us zoom away from treatment centers and stop thinking of treatment as the last bastion of hope. And to start recognizing that treatment is one of the tools in our tool belt. But that while not everyone will need treatment, everyone who recovers from a substance use disorder needs recovery capital. And so with that little [00:53:00] pitch, I'll kind of leave us there. I'm gonna have to skip through some slides quickly.

Sorry for that. Um, and I'll put up my email in case anybody wants to correspond that way. I'm happy to answer questions in that way. And I'll go ahead and take the questions that I can now. I know we're getting close to time, but, um. One of the questions I've got here, someone asked, does the meth brain ever really return to perfect?

And that's a great question. And, um, part of what, um, oh, there's a, there's a video at the end and I almost played it. Sorry. There, part of, um, what that, that brain slide shows, I'm not going to go all the way back to it, but part of what the brain slide shows with, with the, that you're alluding to, the control. The person 30 days abstinent and the person two years abstinent is it shows that through abstinence alone, you don't even have to do anything fancy. Um, abstinence alone will actually cause dopamine to upregulate. Um, there are things that you can do to upregulate [00:54:00] dopamine faster. Effectively help the brain recover faster if you want to think of it that way.

Um, and those include things like exercise and meditation and, as it turns out, social interaction and coffee consumption, caffeine consumption. And the reason I always laugh at that is because when you think about what people are doing in 12 step meetings, is that's exactly what they're doing. They're sitting in a circle, having a social interaction, consuming caffeine. They're really, really benefiting from those meetings because they're replacing lost dopamine and not just spiking dopamine, but upregulating dopamine. Um, so that's a long winded answer. The shorter answer would be not quite. The brain, you know, can fully repair dopamine levels. It can even kind of, you can have, um, greater than normal dopamine levels for a temporary period in recovery.

But one way that you can think of this, and I'm not a neuroscientist, so, um, do your own research on this, but, but the way that it was [00:55:00] explained to me is you can think of these neural track, these neural pathways, um, like, like skis going down a ski slope. And so, you know, every time you ski down the ski slope, you keep going down the same path, and it's wearing deeper and deeper grooves into the snow. Deeper and deeper neuro, stronger and stronger neural connections. And then let's say, you know, every time you use a drug, it's like skiing down, skiing down. And then maybe you have a couple of years of abstinence and during those years of abstinence, it's kind of like snow falls on top of the tracks. So it does cover it up, but the tracks are still there.

And so if you went back to go skiing down that hill two years later, you might slip right into those tracks and uncover them a lot faster. And so instead of it taking five years to develop the tracks like it did initially, Maybe it only takes five weeks the second time, and that's, that's really part of the reason. It's a rudimentary explanation of why, um, when people relapse, oftentimes they descend so much faster than they did initially, you know, it might take [00:56:00] years for someone's initial addiction to develop to a severe place, but from there, relapses can really be pretty, pretty devastating. So thank you for your, for your question.

Milena Stott: Dr. Ellswick, we just have a couple more questions. It looks like 1 more came in too as well. So 2 of them are kind of related to language and the way we use language to describe our experiences, right? 1 is noting the word disease versus the word, versus the word disorder and how that impacts, you know, your belief system and how you feel about it. And then the 2nd refers to chronic and, you know, suggesting that there's no way to completely recover. Do you mind saying a little bit about, you know, those things?

Dr. Alex Ellswick: They're both such, um, such good questions. Um, I, I would say, Gerald, to your question, um, I don't know. That's yes and no. I guess Gerald is what I'd say.

I, um, we, we debate this [00:57:00] a lot in, in an academic sense, kind of me and some of my colleagues with the papers that we write is we, we have to define recovery at some point, but, um, You know, sometimes a more helpful term when you're talking about a chronic disorder is remission. And so you may not ever completely recover, but maybe a helpful way to think of it is you can be in complete remission, which means your risk of relapse is lower than, you know, Billy Bob's risk of relapse, Joe Schmo in the general public.

Um, so in that sense, yeah, that's fully completely recovered. You're still at risk because your brain has still learned some neural connections that it's never quite going to forget. But, um, but, you know, the snow falls on them, and so time begets time. And what was the, um, the first question? Oh, about language disease versus disorder. Um, yeah, this is also, it's, I think when I answer it here in 2 minutes, it's going to sound really semantic and silly to be honest with you. It has some [00:58:00] really serious implications when we try to think about how exactly should we characterize addiction? What exactly is it? And I would say this, what what there is scientific consensus among most respected scientists in the space that addiction is caused by changes to the brain.

We agree on that and we agree that those changes are in the reward center. We don't all necessarily agree on exactly why they happen, or really, especially why, um, yeah, I guess exactly why the changes to the brain happen the way that they do. So, um, I, I use the term disorder and I use the term disorder because among other things, I read a book by one of my favorite addiction thinkers named Maia Szalavitz called Unbroken Brain, where she makes what is called the, um, the neurodevelopmental model of addiction. And essentially what she argues is that addiction, [00:59:00] substance use disorder, is more like a neurodevelopmental disorder than it is like a disease. Which sounds super semantic, but neurodevelopmental disorders are things like ADHD, which typically have an onset during adolescence, um, as does substance use disorder and which people, you know, can sort of mature out of. There's a phenomenon in addiction called maturing out where some, a lot of people recover about the age of 30 about the time that your brain heals.

Not heals, but, but matures fully rather. Um, so all that to say, I don't, I certainly don't shun anyone who calls it a disease. Cause I think that that does a good job, at least in the sense of like destigmatizing addiction and at least clarifying that it's not a choice. But for me disorder, it sounds semantic, but disorder opens up a little bit more room because it isn't, it isn't neatly a disease.

Milena Stott: Well, thank you so much, um, Dr. Elswick for your time and expertise today. Um, we look forward to, to [01:00:00] hearing from you more. Um, thank you everybody.

Dr. Alex Elswick: Thank you.

Michelle Day: This concludes our webinar session. Thank you so much for joining us today. Also, please tune in on the first Thursday of each month from 2 p. m. to 3 p. m. Eastern Standard Time, where we will be hosting subject matter experts from across the nation to bring you valuable tools and resources for rural recovery house operators and SUD professionals. If you would like information on technical assistance, you can go to our website, again, www.fletchergroup.org, which I have also copied in the chat, and submit a

technical assistance request. Lastly, please take a moment to respond to the survey questions once they become available on your screen. Your feedback is very important and greatly appreciated.

Thank you and have a blessed day.

[01:01:00]