



From Management to Recovery: Startups Addressing the Substance Use Crisis

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Author

Darshana Banka

Editors

Shivan Bhavnani, CAIA

Jack Cohen

Jo Angustia

Anthony Cohen



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INTRODUCTION

Addiction is a chronic and treatable medical disease in which people use substances or engage in behaviors that become compulsive and often continue despite harmful consequences. Addiction is otherwise known as a severe substance use disorder (SUD). According to the Addiction Policy Forum, “Two or three symptoms indicate a mild substance use disorder; four or five symptoms indicate a moderate substance use disorder, and six or more symptoms indicate a severe substance use disorder. A severe SUD is also known as having an addiction.”

Almost 21 million Americans have at least one substance use disorder, yet only 10% of them receive treatment. From 1999 to 2017, more than 700,000 Americans died from a drug overdose. According to the National Institute on Drug Abuse, more than 70,000 Americans died of drug-related causes in 2019, 70% of which involved opioids. From 1999 to 2019, nearly half a million people have died from an opioid overdose. This rise in opioid-related deaths can be outlined in three distinct waves: one wave representing the rise in prescription opioid overdose deaths, beginning in 1999; the second wave representing a rise in heroin overdose deaths, beginning in 2010; and the third wave representing a rise in synthetic opioid overdose deaths, beginning in 2013. Together, these form a timeline of the opioid epidemic in the United States.

We cannot fail to mention the impact the COVID-19 pandemic has had on the opioid epidemic in the United States. According to the Centers for Disease Control and Prevention (CDC), as of June 2020, 13% of Americans had reported starting or increasing substance use as a way of coping with stress or emotions related to the pandemic, and that overdose rates have spiked since the start of the pandemic.

One of the most common substance use disorders that are impacting around 300 million people around the world is alcohol use disorder. In America, about 6% of adults suffer from AUD, making it one of the most common substance



use disorders. However, of that 6%, fewer than 10% reported receiving treatment, and 1.6% used AUD medications. AUD-approved medications use three main active ingredients: disulfiram, naltrexone, acamprosate. Disulfiram users have uncomfortable physical reactions to alcohol. Naltrexone blocks the brain's new opioid receptors, making the consumption of alcohol less pleasurable. Acamprosate removes some of the discomforts of withdrawal. Even with medication available, AUD remains a victim of cultural stigma that results in infrequent screening, lack of basic training for healthcare providers, and little awareness about AUD medication. Alcohol is already the third-most preventable cause of death in America; 95,000 deaths annually are primarily due to alcohol misuse. A change in the treatment of AUD is a necessity.

Substance abuse disorders are not only health-related concerns. Drug abuse costs the US economy over \$600 million every year. Another report released by US Drug Test Centers (supported by SAMSHA) stated that of the \$81 billion spent per year on drug abuse in the workplace, the majority of these funds are spent on absenteeism, healthcare costs, and lost productivity. However, some people who abuse substances might qualify as “high-functioning” and can reach personal and professional success despite their substance abuse. The National Council on Alcoholism and Drug Dependence reported that more than 70% of those abusing illicit drugs in America are employed; there are similar statistics for binge drinkers. Despite appearing “high-functioning” or maintaining employment, those abusing substances are not healthy. They are merely indicative of the elusive nature of substance use disorder.

According to a SAMHSA survey of an estimated 9 million full-time college students, 1.2 million students drank alcohol, and nearly 704,000 used marijuana on an average day. People with substance use disorder often have one or more associated health issues ranging from lung or heart disease, increased risk of stroke, cancer, or mental health conditions. For example, it is well established that frequent use of tobacco smoke can cause many cancers, methamphetamine use can cause dental problems like “meth mouth”, opioids



can lead to overdose and death, and inhalants may damage or destroy nerve cells. This intersecting array of severe health implications further force the United States' healthcare infrastructure to invest in drug prevention and treatment.

When considering the impact of substance use disorder on Americans, the US economy, and the country's health care infrastructure, it is important to identify methods of intervention in both the prevention and treatment-rehabilitation areas of mental health care. Such interventions would be financially beneficial to these systems, and would also enable people with severe SUD to recover safely with the greatest chance of long-term rehabilitation, allowing them to build new habits and become healthier versions of themselves.

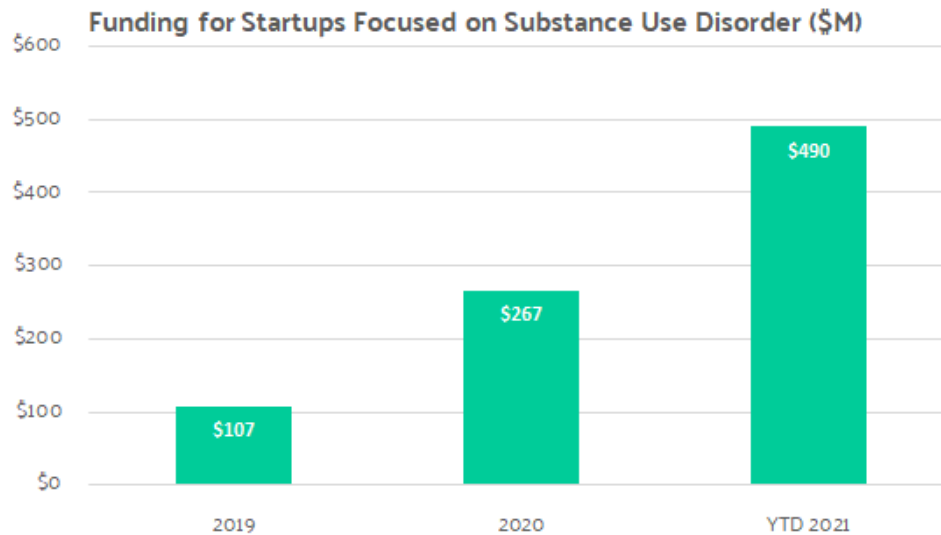


FUNDING FOR TECHNOLOGY

Thankfully, explorations into technological interventions have resulted in products that allow people with severe SUD to do just that. There is a significant gap between the number of people who need help and the number of clinicians who can provide that help. This shortage extends beyond mental & behavioral health to healthcare at large. AAMC found that the US could see “an estimated shortage of between 54,100 and 139,000 physicians,” by 2033. They noted this could be accelerated given growing concerns of physician burnout undoubtedly affected by the pandemic. Hospitals are having to graduate students early from medical schools, hire physicians out of retirement, and expand the scope of practice to minimize the gap.

In addition, technology can shrink that gap. While one new clinician is created from years of schooling, one new specialized product can take significantly less time to create an impact on far more people. Specialized technological interventions are already assisting substance use disorder patients in their recovery and even collecting data to guide preventative plans for SUD at the governmental level. These products and all future technological interventions can become serious tools for clinicians and patients to use. To emphasize the impact technological interventions can have on addressing substance abuse, DynamiCare Health’s platform optimizes contingency management that has shown to be effective in over 100 randomized clinical trials. Results from 3 of its clinical trials show up to three times more likely increase in quit rates across drugs, alcohol, and tobacco compared to those without the smartphone app-based program. This demonstrates the impact technology can contribute to clinician efforts to alleviate substance use.

This is partially why there has been recent investment into mental health care companies that focus on substance use disorder. According to GIMBHI’s database, over 20 startups focused on addiction/substance use disorder raised over \$430 million in 2021 (as of Nov. 1), compared to roughly \$250 million in funding in 2020. 2021’s funding for addiction/substance use disorder-focused startups represents only 8% of total mental, behavioral, brain health startup funding in 2021.



Crunchbase published an article similar to this one that credits the increase in funding partially due to a “diminished stigma” in the conversation around addiction as well as, “Sharp growth in adoption of telehealth technologies,” and a “body of evidence around effective treatment approaches.” The recent \$64M Series B financing for Quit Genius, a startup offering app-based tobacco cessation programs which expanded into alcohol use and substance use disorder, emphasizes the newfound increased attention towards substance treatment startups. The physician co-founders call this technology, “the program they wished they had as physicians.” Some other examples of large funding rounds in this space include Workit Health, a virtual therapy start-up for substance use disorder and addiction care, which raised \$118M in Series C funding, and Wayspring, formerly called axialHealthcare, raised \$75M in Series D funding. The increase in investment is not the only notable opportunity but also expansion of currently offered services by fellow mental health startups. One such example is Lyra Health, a provider for mental health benefits for employees, expanded its services into substance use disorder as stated in a report by Fierce Healthcare. These increases in funding and expansion of indications suggest that there is an apparent opportunity for long-term financial gain and the potential to lower the latent cost of substance abuse disorder on our healthcare system, universities, the workplace, and our evermore interconnected social lives. Further investment in this space would enable companies to develop programs that, if effective, could provide a model with potentially global implications.



STARTUP SPOTLIGHT

Virtual Rehab

Virtual Rehab (VR) is a startup headquartered in Montreal that focuses on integrating virtual reality, blockchain technology, and artificial intelligence to aid pain management, the prevention of substance use disorders, and the rehabilitation of repeat users. Virtual Rehab's services include a 45% to 74% decrease in pain after using VR among 244 2-16-year-old children post regular vaccination, 35% to 50% decrease in perceived pain after using VR alongside standard drug treatment for burn patients, and a significant reduction in the number of opioids administered during painful wound care procedures due to VR. Furthermore, researchers at Duke University also supplement Virtual Rehab's services by showing that when patients in recovery develop strategies to prevent relapse in VR, they can optimize those strategies in the real world too. The efficacy is undeniable.

Virtual Rehab's current business model focuses on Business-to-Business (B2B) customers, which includes rehabilitation centers and hospitals. They charge these B2B customers a licensing fee, subscription-based fee, and development and support charges. The licensing fee charges companies for the right to use the Virtual Rehab platform (the virtual reality and artificial intelligence software). This is billed on a monthly or annual basis. The subscription fee is what customers are charged for program usage. Given that they focus on B2B markets, Virtual Rehab determines a price for service by assessing the size of the organization and the number of patients being served. This is again charged on a monthly or annual basis. The development & support charges are concurrent with personalized VR programs developed for the consumers. These are one-time charges. Virtual Rehab also offers services to Business-to-Consumer (B2C) clients. The consumers use \$VRH tokens to make payments via the Virtual Rehab Online Portal. This ERC20 token also rewards patients for seeking help through the VR Online Portal which empowers them to use such services.

Virtual Rehab launched the Virtual Rehab Therapy Center which is the first of its kind, combining traditional therapy with virtual reality, artificial intelligence, and blockchain technology. They have observed an improvement in outcomes for 87% of patients across a range of categories: problem



recognition and acceptance, openness to change, locus of control, decision-making influences, emotional intelligence & regulation, and motivation & resilience. Virtual Rehab offers an optimized service in two massive markets. Virtual reality is projected to generate \$80 billion in revenue by 2025 and the global market for virtual reality in healthcare is expected to be \$5.1 billion by 2025. Some competitive advantages of Virtual Rehab include first-mover advantage, market leader status, strong brand recognition, patented system, and VRH token incentive.

Biobot Analytics

Biobot Analytics is a Cambridge-based startup that focuses on optimizing robots to collect samples from wastewater infrastructure in order to identify the scope of diseases present. Their first pilot initiative mapped substance use disorder by measuring the concentration of prescription and illicit opioids in the sewage water collected. They were able to help local governments identify the type of opioid used, the general quantity, and the timeframe associated with its use. Biobot first commercially implemented its technology on an opioid analytics program in Cary, North Carolina. They were able to produce accurate information on the use of opioids to better produce effective interventions. This led to a reduction of overdoses by 40% and thereby lowered associated costs to the healthcare system. Biobot Analytics applied its technology to the coronavirus pandemic by helping local governments better estimate rates of COVID-19 infection. Their technology's focus on wastewater collection can drastically reduce the risk posed by overlooked patient populations who cannot afford healthcare. Biobot Analytics can capture a huge market within the United States as there are around 10,000 wastewater treatment plants operated by states, counties, towns, and private companies.

Before the COVID-19 pandemic, Biobot Analytics generated revenue by contracting its opioid detection services to state and local governments. Their coronavirus project, however, is a pro-bono effort, so Biobot is only charging facilities fees to cover costs.

Moving forward, Biobot technology can be applied beyond the opioid and coronavirus public health crises. Some competitive advantages of Biobot Analytics include the first commercial utilization of



wastewater epidemiology in the United States, high acceptability by local governments, and patent-protected technology.

Click Therapeutics

Click Therapeutics is a New York-based startup that focuses on developing software as a prescription medical treatment for smoking cessation and various other indications such as major depressive disorder, schizophrenia, insomnia, migraine, and obesity. Their product Clickotine is a clinically validated digital smoking cessation program. Based on a 416-participant research study, they found that 45.2% of the participants had stopped smoking at the end of the study and 35.3% of participants had maintained cessation at the 6-month-mark.

Part of the Clickotine model includes a personalized quit plan, strategies to help fight cravings, withdrawals, and lapses, social engagement and support from the community, personalized messaging tailored to each profile to provide contextual and personalized guidance, medication access & adherence with no user cost when covered by employers or health plans, financial incentives such as refunds, reimbursement, and rewards provided by sponsors, and Click Digital Care which is an AI-augmented program that helps patients succeed with the therapy. Successful therapy to Click is based on responsive care. An article published on Crunchbase reported, “that while certain treatment approaches are more effective, there is no one-size-fits-all solution.” Click’s approach and attention to detail to the patient’s entire journey are exemplary of this mindset. They are also partnered with Magellan Health—the largest behavioral health insurance company—so they have the support to scale.



LOOKING FORWARD

Accidental drug overdose is currently the leading cause of death in the United States for those under the age of 50. To put that into perspective, more Americans died from a drug overdose in 2017 than in the entire Vietnam War. This speaks to the kind of impact startups in the substance use disorder space can have on people who suffer from this disease and the healthcare costs associated with its treatment. As mentioned previously, \$81 billion is spent per year on treating drug abuse in the workplace, so it is important to look for interventions from a public health and economic perspective. Funding volumes have been growing for this startup space over the past several years, but there is work to be done. As startups navigate issues like payment reimbursements and these novel treatments' relationship to insurance companies more broadly, there remains an unmet need to fund these disruptive technologies. Some of these technologies can expand to other indications, which would eventually shift the focus of healthcare costs from treatment to prevention, fostering a healthier population. Given the increase in the volume of validated clinical trials and a growing preponderance of research by the appropriate health officials, there is a correlated increase in trust in these technologies from the providers, payers, and patients' perspectives. But with this increase in trust in these technologies, a report released by ExpressVPN's Digital Security Lab has raised concerns about opioid addiction treatment apps sharing data with third parties; therefore, breaching patient privacy. At the same time, the report also emphasizes the benefits of these technological-based addiction recovery apps in reducing substance use amongst their users.

We expect that this space will continue to attract investors who will take advantage of the opportunity to lower costs across the wide, interconnected network of the aforementioned strata, and build new infrastructure to provide the support and care needed to alleviate the horrific and expensive symptoms of the drug crisis. Thus, setting us on a path towards a healthier world.



SOURCES

<https://www.addictioncenter.com/addiction/addiction-statistics/>

<https://www.cdc.gov/drugoverdose/epidemic/index.html>

<https://www.apa.org/monitor/2021/03/substance-use-pandemic>

<https://medtechboston.medstro.com/blog/2018/05/08/the-top-tech-startups-fighting-addiction-in-the-us/>

<https://www.startus-insights.com/innovators-guide/5-top-addiction-management-startups-impacting-the-healthcare-sector/>

<https://bhbusiness.com/2020/02/18/digital-addiction-treatment-startups-captivate-investors-payers/>

<https://healthtransformer.co/six-startups-doing-their-part-to-combat-the-opioid-crisis-c39ef7bdc2e>

<https://www.usdrugtestcenters.com/cost-of-drug-abuse.html>

https://www.samhsa.gov/data/sites/default/files/report_2361/ShortReport-2361.html

<https://www.clickotine.com/>

<https://thehealthcareblog.com/blog/2020/02/11/the-digital-therapeutics-startup-following-pharmas-formulary-model-david-klein-click-therapeutics/>

https://growjo.com/company/Pear_Therapeutics

<https://www.canaryhealth.com/what-does-former-cpo-of-pear-think-about-pdt-business-model/>

<https://peartherapeutics.com/pear-therapeutics-launches-pear-assistance-program-to-ensure-access-to-prescription-digital-therapeutics-reset-and-reset-0-for-people-living-with-addiction/>

<https://medcitynews.com/2020/12/pear-therapeutics-raises-80m-in-push-for-reimbursement/?rf=1>

<https://medcitynews.com/2020/03/pear-therapeutics-gets-fda-clearance-for-insomnia-therapeutic/>

<https://www.virtualrehab.co/>



<https://medium.com/@VirtualRehab/everything-you-wanted-to-know-about-virtual-rehab-but-was-afraid-to-ask-56aa5f3a9b26>

<https://medium.com/@VirtualRehab/understanding-the-virtual-rehab-business-model-381b3831bcf0>

https://www.biobot.io/about_us

<https://www.forbes.com/sites/katiejennings/2020/04/24/mit-spinoff-raises-42-million-to-estimate-scope-of-coronavirus-cases-by-analyzing-wastewater/>

<https://www.engine.xyz/founders/biobot-analytics/>

<https://drugpolicy.org/issues/drug-overdose>

<https://www.addictionpolicy.org/post/dsm-5-facts-and-figures>

<https://medcitynews.com/2021/07/addiction-treatment-startup-quit-genius-raises-64m/>

<https://www.fiercehealthcare.com/tech/mental-health-startup-lyra-health-now-worth-4-6b-latest-megaround>

https://www.prweb.com/releases/dynamicare_health_addiction_recovery_platform_users_up_to_three_ti_mes_more_likely_to_quit_substances/prweb17939179.htm

<https://techcrunch.com/2021/07/07/opioid-addiction-treatment-apps-found-sharing-sensitive-data-with-third-parties/>

<https://www.mobihealthnews.com/news/workit-health-lands-118m-its-digital-tool-focused-substance-use-disorder>



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