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REVIEW

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Childhood trauma, addiction & a modernized approach to treatment

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Abstract

This review serves to analyze the relationship between childhood trauma and addiction; provide an overview of the science behind addiction; analyze issues with current addiction treatment methods and protocols; as well as to provide a list of proposed changes to modernize addiction treatment to a level of quality which will prove much more successful in the treatment of addicts.

Key words: Addiction, Treatment, Recovery, Drug, Policy, Childhood trauma

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The authors declare that they have no conflict of interest.

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Addiction and issues with current treatment programs

Addiction treatment programs have been largely unsuccessful. Considering the advancements and proven practices in addiction treatment that are based on evidence-based research there is no acceptable reason for failure other than the failure to assess the program and failure to add updated interventions as a measure of quality improvement. Death from overdose has climbed to staggering numbers in recent years to become the number one cause of accidental death in the United States (but is in no way a problem isolated to the United States but in many countries all around the globe), in 2018 alone there were 67,367 deaths to overdose [1–2]. The goals of any addiction treatment program should be to provide care that is based on the latest evidence-based practices; ensure access to the program, and to see positive measurable program outcomes. Successful completion of the program should be defined by the ability of the addict to achieve and maintain a rewarding, productive, and substance-free life. Current addiction treatment has failed to implement any of the latest in evidence-based proven practices and that is a failure in and of itself.

To define addiction, we use the following criteria [3]. (1) The individual has difficulty controlling how much he/she uses or how long the drug is used. For example, one drink leads to more drinks, or one line of cocaine leads to more. (2) The individual continues to use even though it has negative consequences to his/her life. For example, you continue to drink even though it has hurt your relationships, cost you a job, or made you homeless. (3) The individual has been unable to maintain a substance-free life.

Addiction may begin with an initial choice made by an individual within a social setting, or as the result of a series of bad choices, perhaps it may even have begun with a prescription for pain medication after an injury or surgery. Regardless of addiction's origin, the result is always the same—it ultimately stops being a choice and becomes the driving force behind every action and decision of the addict [3]. The Betty Ford Consensus Panel defined recovery as consisting of three parts: sobriety, personal health, and citizenship [3]. McLellan, Chalk & Bartlett define recovery in a different way: substance use status, employment/self-support, and criminal behaviors [3]. Both of these definitions encompass the true measure of an individual's recovery and measurements of success should be based more on points such as these.

According to addiction and recovery, continued use of a substance actually creates a larger problem over time because in response to the drug repeatedly creating the feel good feeling, the body then creates even less dopamine which is referred to as tolerance or resistance to the drug's effects on the body/brain [4]. Tolerance results in the addict needing more and more of the drug to feel good. Many addicts turn to prostitution or selling drugs in order to afford the drug they need for themselves. The drug becomes the most important thing in the addict's life and what they spend most of their time thinking about and doing. Prolonged use causes many health problems, many even fatal [4]. It has become common knowledge that addiction usually ends in 1/3 ways: dying, dead, or incarcerated.

When an addict stops using the drug, the process of ridding the body of the toxic substance, and learning to live life substance free is referred to as getting clean [4]. Most addicts eventually want to get clean, but too often their desire to make the change does not come until they have paid a very high price for their addiction or a had a life-altering experience like a near-fatal overdose, car accident, job loss, divorce, or the death of a loved one. When a clean addict uses the drug again after a period of time being clean, this is referred to as a 'relapse'. Some never find the strength to attempt getting clean again. Those that do normally have many relapses, ruining their lives repeatedly. Many refer to these times as hitting rock bottom. Under current addiction treatment methods only a very small percentage of addicts ever fully recover from addiction-the actual success rate is impossible to calculate because tracking every addict's treatment outcome across their lifespans is not a cost-effective option, however, based on the relapse rates, death rates, and re-treatment rates-it is accurately deduced as a very low percentage.

When an addict decides to get clean *withdrawal* begins fairly quickly. Withdrawal consists of the physical, chemical, and emotional changes the body experiences as the toxic drug leaves its system. It is very uncomfortable and includes the following symptoms [4]: low energy, irritability, anxiety, agitation; sleep disturbances & vivid dreams and nightmares; hot and cold sweats, goose bumps; yawning; muscle aches and pains; abdominal cramping, nausea, vomiting, diarrhea.

Withdrawal can last from seven to 30 days or more and goes through phases [5]. The first phase (acute withdrawal) begins within hours after ingesting the substance for the last time, lasting from one to four weeks. The second phase (post-acute withdrawal syndrome sometimes referred to as PAWS) can last up to 2 years with symptoms that include mood swings, anxiety, low enthusiasm, issues with concentration, and sleep disturbance [5]. The length and severity of withdrawal coupled with the return of the physical and emotional pain that has been numbed for the entire duration the addict was using, are the driving forces behind relapse [6]. This is the true nature of what the health care system is up against when trying to treat addiction. This cycle, 'use-hit rock bottom-seek recovery-withdrawal-relapse', repeats many times, but the experience is different for each addict which is why

it is important for treatment plans to be tailored to each individual [3]. The very nature of the cycle of addiction makes planning for addiction treatment a very complicated process. As previously mentioned, currently the success of addiction treatment, or recovery, has been measured by how many days, weeks, or months that an addict remains clean. According to the National Survey on Drug Use and Health, more than 20 million people have a substance use disorder in the united states [3]. The exact causes of addiction (and why addiction is still not treated properly) are complicated, intertwined, and many. Science has found a 95% positive correlation between addiction and exposure to childhood trauma, and despite 95% of addicts reporting traumatic childhood experiences-traditional addiction treatment programs give no consideration to treating the long-term psychological, endocrinological, or neurological effects of childhood trauma [7] . Since 95% of addicts report exposure to childhood trauma it is actually silly to expect addiction treatment to be effective without addressing all of that also, which of course requires various types of medical professionals who typically have not been included within the addiction treatment process.

Addiction treatment policies and program interventions have remained largely unchanged since the 1950s, even as evidence-based research and new treatment recommendations continue to be widely ignored [8]. Another problem identified in addiction treatment is that national and state standards currently only require an addiction treatment provider to have an associate degree in any concentration, with the majority of states only requiring only a general education diploma and brief in-house training certifications [9]. In this writer's opinion, it is negligent of governing bodies not to require much more stringent credentialing criteria for providers who treat disease as deadly and life-altering as addiction. Because addiction is most often associated with childhood trauma, and/or an intergenerational predisposition to addiction as a result of trauma experienced by the mother or grandmother in generations before, addiction screening and prevention interventions must begin long before substance use even begins, even as early as preschool and definitely in adolescents [9]. This is very important and cannot be stressed enough: it makes sense that if 95% of addicts had experienced childhood trauma, then early screening measures could be very effective in the prevention of exposure to the trauma, so therefore-the odds are very good that addiction can then also be avoided. This realization should be enough to make early screening and trauma prevention the #1 intervention and line of defense in fighting addiction. Treating the physical and psychological effects from trauma must be 2nd in the line of defense against addiction to eliminate them as reasons for continued drug use, making actual traditional addiction treatment interventions as the 3rd line of defense against addiction.

Providers have recently begun to acknowledge the importance of trauma-informed care and have made attempts to implement it within their programs and services, however, this movement has been slow and not widespread [8]. A recent mega-analysis titled "Addiction Medicine: Closing the Gap between Science and Practice" conducted by the National Center on Addiction and Recovery of Columbia University in June of 2012 concluded that the vast majority of current addiction treatment programs are based on severely outdated ideology and methodology [10–11]. Current methods of addiction treatment include interventions which include the following list [4]: drug and alcohol abuse evaluations; cognitive behavioral therapy; individual and group therapy sessions; family therapy; medication assisted treatment; vocational service; and, if insurance approves—an average inpatient treatment duration of 28 days.

There are now more than 23 million American's in recovery from addiction [12]. There is no cure for addiction, it is a chronic disease that remains with the addict for their entire life. Recovery requires much determination and hard work from the addict, many giving up along the way, but it is expected to be much less difficult to face sobriety in addicts who actually receive treatment for the physical and mental anguish they endure later in life as a result of childhood trauma [12]. It is thought that these pains alone could be the cause of a large percentage of relapse cases, however, failure to treat those aspects of the addict's life is certainly not the only reason the low success rates of treatment programs. The report, "Addiction Medicine: Closing the Gap between Science and Practice" list reasons for the lack of success in treatment-these include [11]: inadequate health insurance coverage; inadequate screening tools; lack of the right type as well as the number of professionally trained staff; lack of networking and reporting of data to state and national systems; competing priorities of policymakers and insufficient resources for providers; lack of inpatient facilities and infrastructure; insufficient training of current staff; and even attitudes and perceptions of addiction and treatment on behalf policymakers, providers, and the public.

Science behind addiction: the latest evidence-based research

Research has mounted showing a strong positive correlation between exposure to childhood trauma and addiction, with as many as 95% of addicts reporting childhood trauma exposure [8]. Yet the latest evidence-based research of successful addiction treatment interventions shows that the minimum time needed for the inpatient portion of treatment is at least three months and as long as 12 months, and often much longer—

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followed by a lifetime of continued outpatient treatment and services. Again, it is important to remember that it is just as important to ensure access to care for the comorbidities of addiction including mental health issues and trauma-related disorders and illnesses [11]. Recent studies also suggest that the majority of addicts already have an imbalance of chemicals within the brain, like dopamine, a neurotransmitter naturally produced by the body that sends messages to and from the pleasure center of the brain. This chemical imbalance tends to cause mood swings and disorders which "feels better" when the drug of choice enters the bloodstream [13]. The addict does not even realize this is why they prefer and enjoy that particular drug, but it is because the drug seems to "fix" the problem. Dupont defines recreational pharmacology as "the widespread use of chemicals that stimulate brain reward for pleasure and 'self-medication'" [12]. He also describes a harsh reality when he claims that this drug epidemic is not a temporary problem and it is growing even more malignant, the sheer number of overdose deaths shown on the daily news is evidence of that [12].

According to the National Institute of Health, "Addiction affects multiple brain circuits, including those involved in reward and motivation, learning and memory, and inhibitory control over behavior. Addiction is essentially a brain disease" [13]. This includes complex neurological and endocrinological damage that the latest research shows are highly prevalent in addicts who have suffered overexposure to childhood trauma [8–10]. Researchers agree that the damage to the brain, witnessed on MRIs, is the direct result of childhood trauma and that it is the exact 'areas of the brain' that have been damaged that 'is the cause of addiction' [8–10].

The amygdala is the area of the brain that controls emotion, memory, and fight or flight response. This explains a lot because how many times do we hear addicts claim they use their drug of choice in attempts to numb the emotional or physical pains of their past, or they use to "calm down" or control their emotions, or even to help them forget things they do not wish to remember? The fight or flight response is explained a bit further into this presentation.

The nucleus accumbens is the area of the brain that controls the pleasure and reward circuit. Damage done in this area has made it difficult for the addict to feel the same level of enjoyment or satisfaction from normal daily life that people not affected by trauma are able to, and because of this-it now takes an elevation in risky behavior or drug use for the addict to feel the same pleasant effects, or "feel-good endorphins" from their pleasure and reward center.

The prefrontal cortex is the area of the brain that controls decision-making, impulse control, and social behavior. This explains why an addict in recovery struggles to make the right decision regarding the impulse to use, especially in social gatherings.

According to the National Institute of Drug Abuse, there is a need to modernize addiction treatment by establishing a national, evidence-based, standard of care that stipulates who may provide addiction treatment and integrates core competencies in trauma-informed care into the education, training, and licensing requirements of addiction treatment providers [13]. Treatment programs and employees must be regulated and held accountable for providing treatment that is consistent with the latest in proven practices. Current addiction treatment methods lack successful and proven evidence-based methods, and as such-could be labeled medical malpractice [13].

Dr. Nadine Burke Harris is a leading expert on the life-long effects of exposure to childhood trauma, and trauma-informed care [8]. She refers to the Adverse Childhood Experiences Study completed by Kaiser Permanente and the Center for Disease Control and Prevention which proved that repeated activation of the fight or flight system, which is regulated by the hypothalamic pituitary adrenal axis, causes the survival response of the body to go from adaptive to maladaptive in those who are exposed to repeated, prolonged, or excessive trauma during the formative years in childhood. She uses the example that the fight or flight system was designed for and works fantastic if you wander upon a bear in the woods. But when the child faces that same scary bear in the supposed safety of their own home, night after night, the fight or flight system becomes stuck in a constant state of readiness. It is this unnatural and constant state of readiness that causes the damage to the child's brain, literally altering the way the child's DNA is transcribed over his or her lifetime. It is this alteration that leads to chronic and terminal illness, psychological disorders, increased suicidal ideation, and addiction [8].

A new modernized approach to addiction treatment

Dr. Burke Harris states that those who receive care which addresses the trauma and its long-term effects have marked improvement in all areas of health outcomes, including addiction [8]. State and federal trauma networks are available which provide the latest in research, information, and resources to ensure the transition to trauma-informed care go as smoothly as possible. The New York State Trauma Informed Network was developed in 2018 to pool together all providers who are putting trauma-informed care into practice as a networking tool and source for the latest information, services, education, methodology, research, trauma screening tools, databases, and more [14]. The National Child Traumatic Stress Network was created in 2000 by Congress, its purpose is to raise the standard of care to include the professional treatment of

people who have been traumatized in childhood and suffer from the long-term effects, including addiction, as well as advocating for policy and education changes to include trauma-informed care [15]. Researchers agree that along with certified trauma-informed addiction treatment counselors, specialists are needed who are trained and credentialed to treat trauma and addiction in the following areas [8–10]: psychiatry, psychology, neurology, endocrinology, primary care, nursing.

Modernized addiction treatment must include a minimum inpatient treatment duration of 90 to 365 days or more-followed by access to life-long trauma-informed out-patient care that addresses the entire person as well the comorbidities associated with trauma and addiction [11]. Recognizing that as many as 95% of addicts receiving treatment are also in need of care for post-traumatic stress disorder as a result of high levels of exposure to adverse childhood experiences, Hazelden Betty Ford has developed a system and series of programs that adds trauma-informed care to addiction treatment which has shown a marked increase in the successful recovery of addicts [16]. There, trauma-informed care in addiction treatment is defined as the "collection of approaches that translate the science of neurological and cognitive understanding of how trauma is processed in the brain into informed clinical practice for providing services that address the symptoms of trauma" [16]. There are other such programs established, but they are rare and not accessible to most individuals due to a lack of geographical locations offering these services. Hazelden Betty Ford should serve as a model for the development of a universal trauma-informed addiction treatment intervention program that should be implemented in every county of every state in the United States. While continuing to be a leading example for trauma-informed addiction treatment, Hazelden Betty Ford continues to push for every provider to seek education and provide trauma-informed care, even more importantly, they stress the need for an increase in specialty providers that are trained to provide the very sensitive care needed to work through traumatic experiences so as to treat the cause and not continue to only treat the symptoms [16].

There is an extreme gap between the number of providers who have the proper training necessary to treat the trauma itself and the overwhelming number of individuals who have the need for this type of treatment [17]. There is a need for policy change in the education of medical and mental health professionals to include the knowledge and skills to treat trauma [18]. There is also a gap between the need for trauma-informed care in the absence of the ability to treat the actual trauma and those who have been trained to deliver trauma-informed care. A summarized list of needs follows.

(1) Higher education and training of current drug treatment staff to include a minimum equivalent of a master's degree in trauma-informed care and the psychoneuroendocrinological treatment of addiction [9].

(2) The addition of specialty providers to include neurologists, endocrinologists, psychiatrists, primary care providers, and nurses-all with certifications in trauma-informed care and addiction treatment [10]. Establishment of an increase in inpatient addiction treatment facilities with 90 to 365-day treatment programs [13].

(3) Adaption of early and accurate screening tools to identify risks of exposure to trauma, levels of exposure to trauma, as well as risks of addiction and addiction status [11].

(4) Increase research of addiction, screening, and treatment for efficacy: strengths—increased understanding of the root causes of addiction needed to develop modernized evidence-based addiction treatment options. Weaknesses—will take time and funding [18–24].

(5) Increase budgets for a longer duration of inpatient treatment, develop post-treatment services and transitional living arrangements until integrated back into society at least a year following entrance into treatment: strength—healthcare continuity is important and needed to treat addiction effectively. Weakness—requires funding and legislation that requires insurance companies to pay for the newer and more expensive treatment [18–24].

(6) Addition of in-school education programs for children from 6th grade through 12th grade as a form of prevention: strengths—reduces the number of individuals who become addicted based on increased awareness and education. Weakness—requires funding and program administrators/teachers, etc. [18–24].

History has taught that along with progress, there are barriers to progress. There are perceived and most likely unperceived barriers that must be overcome to move forward in the modernization of any addiction treatment program. The first of these, of course, is cost, and in response to that I remind you that re-hospitalizations, or in this case, re-treatment-inevitably costs more than providing successful treatment one time, and because of that—the changes to the program will pay for themselves in the reduction of re-treatments.

Other barriers may include the development of infrastructure for the proposed inpatient facility, staffing issues, legislative & policy changes; insurance company compliance, and legal or ethical considerations. My research has not found any legal or ethical considerations other than to offer full disclosure of the improved treatment plan to the program participants, and of course obtaining informed consent. Information and resources can be found on the New York State Trauma Informed Network and the National Child Stress Network websites to help overcome these barriers and other barriers and once established, the modernized addiction treatment programs must be continuously

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assessed for efficacy to ensure the program outcomes align with the program goals.

The first step in assessment is to identify the desired outcomes [24]. In this case, the desired outcomes would include an increase in the number of addicts who become able through the modernized addiction treatment program, as well as a reduction in overdose deaths, and program re-entries. The second step would involve evaluating the current situation in relation to the desired outcomes. To re-summarize—the current addiction treatment methods lack interventions in evidence-based practices and therefore are unable to meet program goals. The third step is to establish criteria for success, which we have already established in defining addiction treatment program goals. Data will be analyzed at routine assessments as laid out below. The fourth step is to collect necessary background information and data by monitoring program participants every month using drug testing and self-reporting over the lifetime of their addiction treatment. The fifth step is to plan and execute improvements as explained in the Closing the Gaps section of this report. And the sixth and final step in assessment includes the collection of additional information and data routinely to determine the success of the improvements to the program as laid out below [24].

Many components of treatment programs would have to be analyzed, including [24]: (1) Changes in the number of overdose deaths; (2) Drug testing of program participants; (3) Cost-effectiveness (are the results worth the financial investment?); (4) Negative and positive results on public health, individual health, the judicial system, corrections systems, infrastructure, barriers, staff, etc.; (5) The effect of new policy and interventions on the number of new cases of addiction; (6) Short and long-term outcomes of the new evidence-based addiction treatment program as measured by overdose death, program completion, incarcerations, relapse, program re-entry, and the number of addicts who do achieve and maintain a productive and substance-free life.

Information regarding evaluation can be found in increments throughout this report as needed for full descriptions but is explained more comprehensively here. During program development, there is a need for weekly formative evaluations to collect data and to monitor inputs and activities of the program [24]. This is essential in staying on track and being prepared and ready to implement the program on the planned target date. This will allow the ability to identify any issues in the development of the program. Throughout the implementation of the program, the RE-AIM model is used in routine process evaluations to monitor how the program is going regarding inputs and activities. RE-AIM is an acronym for reach, effectiveness, adoption, implementation, and maintenance. It is useful in studies focused on changing individual behaviors, such as substance abuse. Impact evaluations and outcome evaluations (may need to use a proxy outcome) will be done at the end of the program and every six months following the conclusion of the program, for a period of 3 years to determine the short and long-term efficacy of the treatment program [24].

Conclusion

Because we are complex beings and our health status is based on our physical, psychological, emotional, social, and spiritual wellness-effective addiction treatment must address the whole person, the trauma itself, as well as all of its long-term effects, it must even acknowledge the spiritual component and consider providing support to some degree in this area also. In response to the overdose epidemic and failed addiction treatment programs, this writer strongly urges legislators, policymakers, and addiction treatment program providers to begin modernizing treatment protocols immediately as a public health response which will save many lives and possibly end the overdose pandemic.

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