

Addiction Still Eludes A ‘Magic Bullet’ Cure

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We see the effects of addiction every day. In the United States, more than 30,000 people die each year from alcohol abuse,¹ and more than 480,000 people die from tobacco use.² Although we don’t yet have the final numbers, statisticians estimate 64,000 drug overdose deaths for 2016, a figure that would make drug overdose the leading cause of death for Americans under 50. More than two-thirds of those deaths are from opiates, with the number of fentanyl deaths rising rapidly.³

As health care providers and policymakers, we see the threats that addictions pose to the lives of patients, families and communities. In recent years, the study and treatment of addiction has expanded considerably, moving away from perceiving it as a moral problem to examining it in larger social, biological and developmental contexts.

Thinking of addiction as something that happens to socially marginalized “others” is statistically incorrect. Large meta-analyses of data have shown that approximately 47 percent of U.S. adults suffer from the maladaptive signs of an addictive disorder in any given 12-month period.⁴ It has become increasingly recognized that almost anything in the modern world can trigger the behaviors and neurobiology of drug addiction, even everyday things like eating, working, falling in love, exercising and using the internet. Granted, some addictions are deadlier than others, and some addictions are more socially acceptable than others.⁵

ADDICTION AS A BRAIN DISEASE

In the 1930s, Alcoholics Anonymous and its allies began to present alcoholism and other addictions as a chronic, relapsing and permanent condition separate from morality. Now, more than 80 years later, the chronic brain disease model of addiction has become the dominant view.⁶ The chronic brain disease model is supported by major medical groups, including The National Institutes of

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Health (both the National Institute on Drug Abuse and the National Institute of Alcohol Abuse and Alcoholism), the American Medical Association, the American Psychiatric Association and the American Society of Addiction Medicine.

The American Society of Addiction Medicine



was established in 1954. It represents more than 5,000 physicians and other clinicians who specialize in addiction medicine. They work closely with government agencies such as the National Institutes of Health and the Substance Abuse and Mental Health Services Administration, and they are specifically interested in research and treatment of addiction as a brain disease and the role of physicians in treatment. ASAM defines addiction in this way:

Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.

Addiction is characterized by inability to consistently abstain, impairment in behavioral control, craving, diminished recognition of significant problems with one's behaviors and interpersonal relationships, and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.⁷

The disease model provides a framework and a research agenda for addiction medicine. Because it is a medical model, it also grants a context for the use of medications and development of pharmaceuticals to treat addiction. In the chronic brain disease model, common treatment interventions include medications, cognitive behavior therapy, motivational interviewing and self-help groups such as 12-step programs.

GENETIC PREDISPOSITION

The American Society of Addictive Medicine argues that about 50 percent of addiction risk can be attributable to genetics, which is then combined with environmental factors.⁸ The addictive agents frequently studied for genetic links have included drugs, foods, sex, video gaming and gambling. Any of these can lead to an addicted state through the same neurobiological pathways

found in drug addiction.

Evidence from family, adoption and twin studies has shown genetic aspects to both starting the use and continuing the use of addictive agents, particularly in the transition to problematic use.⁹ Starting use has been more strongly linked with environmental factors and peer group, whereas continued use and addiction have been found to have stronger genetic links than starting use.¹⁰

Of the addictive agents mentioned above, heritability of addiction was shown to be lowest for hallucinogens (0.39) and highest for cocaine (0.72), with many agents listed in between.¹¹ The study of the specific genes involved is still in its infancy, but research is ongoing regarding how

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addictive agents interact with different genetic variants, helping to explain why some people develop addiction but others do not.¹²

Because of genetic variance, there also is varied response to how people respond to pharmacological treatments used to manage licit (alcohol, nicotine) and illicit (cocaine, opiates, methamphetamine) drugs. Researchers hope that a better understanding of how addictive agents interact with human genotypes may ultimately lead to better treatments for addiction.¹³

ENVIRONMENTAL RISK FACTORS

Although dependence and addiction can rely heavily on genetics, initiation of use has been linked strongly to environment.¹⁴ These environmental aspects often are discussed as risk factors versus protective factors for addiction.

The federal Substance Abuse and Mental Health Services Administration (SAMHSA) lists several risk factors and protective factors, many of which are shared with mental illness. SAMHSA defines risk factors as "characteristics at the biological, psychological, family, community, or cultural level that precede and are associated with a

higher likelihood of negative outcomes.”¹⁵

Individual-level risk factors do not change over time, and they may include a person’s genetic predisposition to addiction, or his or her exposure to alcohol prenatally. Variable risk factors do change over time and include income level, peer group, adverse childhood experiences, and employment status.

SAMHSA defines protective factors as “characteristics associated with a lower likelihood of negative outcomes or that reduce a risk factor’s impact.” Some of the protective factors that SAMHSA discusses include positive self-image, self-control and social competence.

Addictions are different from some habits in that they have strong emotional associations, linked with desire. When such associations are formed in the childhood or adolescent brain, the brain pathways can be especially difficult to change.

Adverse childhood experiences (ACEs) are a significant risk factor for addiction. The U.S. Centers for Disease Control and Prevention, in collaboration with Kaiser Permanente in Southern California, conducted research from 1995-1997 that collected voluntary data on 17,000 of Kaiser Permanente’s health maintenance organization members regarding childhood experiences, current health and later health outcomes.¹⁶

The research studied specific categories of adverse childhood experiences: psychological, physical or sexual abuse; violence against mother; living with household members who were substance abusers; mentally ill or suicidal; or ever imprisoned. The study then compared the results of those categories to measures of adult risk behavior, health status and disease.

The study showed that higher adverse childhood experience scores correlate not only with mental health and addiction problems, but that people were affected more negatively depending upon the number of adverse childhood event categories they had experienced. People with high

ACE scores also had significantly higher rates of physical illness and early death.

OTHER THEORIES

The brain disease model has been helpful to many people, but addiction is a complex interplay of factors and no “magic bullet” has been found. Addiction researchers continue to put forth other theories in the fields of addiction medicine, psychiatry and neurobiology.

A few of the main theories follow, and each theory has its proponents and critics.

Coping Mechanism for Social Isolation.

In the 1990s, Portugal had one of the worst opiate addiction rates in Europe. One percent of Portugal’s population was addicted to heroin, and overdose deaths were skyrocketing.

In 2001, Portugal’s government decriminalized personal addiction. Although drugs remained illegal and drug trafficking remained a crime, Portugal began to treat drug abuse as a health concern and social issue, not a criminal problem to be solved by punishing heroin addicts.

Portugal’s government put the money going to drug enforcement and incarceration into linking people into communities — addressing issues of jobs, housing and medical treatment. People with addictions became less afraid to come out of the shadows and seek help, and overdose deaths decreased. Even those who had previously lobbied against the law didn’t want to go back to criminalization after they saw the results.¹⁷

Developmental Habit. Marc Lewis, PhD, is a developmental psychologist who emphasizes the importance of the brain’s neuroplasticity. He believes that our brains learn addictions in the same ways that we learn anything else, by repeated synaptic firings leading certain circuits to fire together and wire together.¹⁸

He argues that the brain is very good at forming habits. The brain’s ability to form habits is why we can drive, listen to the radio, and have a conversation, all at the same time. Each of those habits involve learned behaviors, learned to the extent that they have become almost automatic.

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According to Lewis, this goes for anything that activates those pathways and has a strong emotional component, regardless of whether we are talking about pleasure obtained through drugs, falling in love, cheering for a favored sports team or jihadism.

Lewis views addictions as phases of human development that we have learned. He believes that we can, with significant effort, unlearn addictions also. There are physical changes in the brains of people who abuse alcohol and drugs that may make it harder for them to stop. But, Lewis argues, such changes can be seen in the brains of people who learn anything whatsoever. In this model, the answer is to unwire the habit and to wire other ones in its place.

Coping Mechanism for Trauma and Loss. Gabor Maté, MD, is a Canadian physician who specializes in addiction. He believes that all addictions are a way to cope with trauma, often trauma that we don't even acknowledge to ourselves. Like Lewis, he believes addiction is best regarded as a normal developmental response. In Maté's case, he believes that "addiction is neither a choice nor an inherited disease, but a psychological and physiological response to painful life experiences."¹⁹

In Maté's framework, we must treat addicted people by examining the underlying traumas and utility of the addiction to the person, or we are just

dealing with effects without looking at causes. Maté asks his patients, "What purpose did this addiction serve? What did you like about it?"

Maté believes that the object and duration of the addiction are irrelevant. He argues that not only are the same neurotransmitters and neural circuits shared by all addictions, but that they also share the same emotional dynamics of shame and low self-worth, and the same addiction behaviors of denial, dishonesty and subterfuge. He states, "The question is not why the addiction, but why the pain?" In his model, people suffering from addictions must address their own traumas.

CONCLUSION

Our society is experiencing what appears to be a tidal wave of addictions and deaths. We may not be able to reverse the trend without considering underlying causes such as trauma, social inequality and alienation. Whether we perceive addiction as a disease, a coping mechanism, or a developmental phase, we can see that people need help. Because we haven't found a magic bullet to cure addiction, it is worthwhile to know about various approaches to the issue. More are sure to come in the years ahead.

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