The Science of Addiction

What Is Addiction?

• Addiction is a complex disease. No single factor can predict who will become addicted to drugs. Addiction is influenced by a tangle of factors involving one’s genes, environment, and age of first use.

• Addiction is a developmental disease. It usually begins in adolescence, even childhood, when the brain is continuing to undergo changes. The prefrontal cortex—located just behind the forehead—governs judgment and decision-making functions and is the last part of the brain to develop. This fact may help explain why teens are prone to risk-taking, and why they are also particularly vulnerable to drug abuse.

• Prevention and early intervention work best in the teen years. Because the teen brain is still developing, it may be more receptive to interventions to alter the course of addiction.

Research has shown many factors that lead to drug abuse and addiction: mental illness, physical or sexual abuse, aggressive behavior, academic problems, poor social skills, and poor parent-child relations. This knowledge, combined with better understanding of how the teen brain works, can be applied to prevent drug abuse from starting or to intervene early to stop it when warning signs emerge.

Prevention Resources

• NIDA and other organizations have spearheaded a number of programs to help prevent addiction, including:
  — Family-based: Teaching parents better communication skills, appropriate discipline styles, and firm and consistent rule enforcement
  — School-based: Building young people’s skills in the areas of peer relationships, self-control, coping, and drug-refusal
  — Community-based: Working with civic, religious, law enforcement, and government organizations to strengthen anti-drug norms and pro-social behaviors

One-Time Drug Use Can Set Stage for Relapse

In this experiment, rats pressed a lever in response to a cue (white noise) that had originally indicated access to cocaine even a year after the cue stopped being associated with drug availability. This is because there is a very strong association in the brain between the drug experience and the setting of the drug experience. Even a long-dormant craving may be triggered simply by encountering people, places, and things that were present during a previous drug usage—another reason never to use drugs of abuse even once.

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