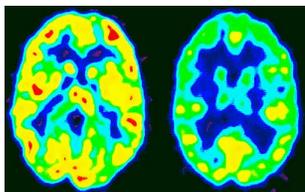


Questions and Answers on Addiction

Stephen L. Dewey, Ph.D., is a Senior Scientist in the Chemistry Department at Brookhaven



National Laboratory, a Research Professor in the Psychiatry Department at New York University School of Medicine, and an adjunct faculty member in the Department of Neurobiology & Behavior at the State University of New York at Stony Brook. Through an outreach program that he initiated, Dr. Dewey has spoken to thousands of children, parents, teachers, boards of education, and community groups about addiction research at Brookhaven Lab. Past President of his school board, he currently serves on the Eastern Suffolk BOCES Board of Education. The author of over 100 scientific papers, he has received many awards and has been featured on TV news programs as an expert in his field.



As shown in these PET scans, brain activity (indicated by yellow and red areas) decreases with cocaine use (right).

Is addiction a disease? Yes. Profound changes in addicts' brains are similar or may be worse than changes observed in people suffering from diseases such as Parkinson's, Alzheimer's, and/or mental illness.



Stephen Dewey and a colleague probe the mysteries of the brain.

Is there hope for an effective treatment? Yes.

Work at BNL has identified a candidate drug, which preliminary tests have found to be effective against all abused drugs. No other drug has been studied as extensively. This drug, combined with behavioral therapy and a stable social structure, perhaps could lead to an effective treatment.

What role does the environment play in addiction? The environment plays a crucial role in craving and environmental cues — such as people, places, and things previously associated with drug intake — which are among the most important triggers that cause relapse. These powerful cues produce changes in brain chemicals that are believed to underlie relapse.

Do all drugs of abuse work the same way? Yes, to a certain extent. Drugs of abuse produce a marked increase in a brain chemical called dopamine. This increase has been associated with the "high" produced by all drugs of abuse.

Do all drugs of abuse damage the brain the same way? No. Different drugs produce different changes in different brain regions. For example, changes in the brains of people addicted to methamphetamine are different from those changes in people abusing cocaine, marijuana, or alcohol.

Does stopping drug use prevent further damage to the brain? It appears from our work that people who stop abusing drugs today may prevent further damage tomorrow.

Are these brain changes permanent? We do not know. We have evidence that changes are still present as long as 14 months after drug use has stopped. In alcoholics we see a modest recovery in only some individuals.

How much of a drug does someone have to abuse before brain changes occur? We do not know. We suspect, however, that different amounts of drugs have different effects on different people. That is, some people may be more or less vulnerable to the effects of drugs. Therefore, we may not be able to determine an amount that consistently produces changes.

Does smoking marijuana lead to abuse of "harder" drugs? People who abuse drugs such as cocaine, heroin, and methamphetamine frequently first start by abusing marijuana. However, a direct cause and effect relationship has not been established.

Does tobacco affect the brain? Yes. Nicotine increases dopamine levels like other addictive drugs. Our research also shows that another component of tobacco smoke inactivates two very important chemicals that break down dopamine. In former smokers, these chemicals are at normal levels. We don't know how long it takes for recovery but we do know that it does not occur overnight.

What should we tell our children about addiction? All addicts start out believing they will never become hooked to any drug. This suggests that something beyond their control happens in the brain, resulting in their inability to stop the behavior. We do not know if drug-induced changes produced today will result in more behavioral changes years from now.