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# NIDA NOTES

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**25 Years of Progress**

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## NIDA Symposium Spotlights 25 Years of Drug Abuse Research

By NIDA NOTES Staff Writers, Robert Mathias and Patrick Zickler and Contributing Writers Barbara Shine and Raymond Varisco

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**NIDA's year-long celebration of the Institute's 25-year history of research culminated on September 29 with a symposium at the National Institutes of Health in Bethesda, Maryland. The event highlighted NIDA's past and present accomplishments and offered a look at the direction and scope of future research.**

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In these pages we present a sampling of the presentations made by speakers whose work has helped NIDA uncover the biological and behavioral structure of drug abuse and develop, test, and implement new treatments and prevention programs. For a sample of important new work presented at the symposium by young NIDA-funded researchers, See "[Poster presentations by NIDA Investigators.](#)"

In the future, effective drug abuse treatment will continue to require a combination of medications and behavioral interventions, said **Dr. Herbert Kleber** of the Columbia University College of Physicians and Surgeons in New York City. He noted that past research has produced medications, such as methadone and LAAM, that can treat opiate addiction effectively, as well as successful behavioral drug abuse treatments that include relapse prevention and motivational strategies. However, he said, 75 percent of heroin addicts are not in treatment, and existing medications all have some drawbacks. Therefore, we need both better medications and better ways to get patients into treatment for heroin addiction.

Medications developed for conditions such as depression and epilepsy will continue to be a source of new addiction treatment medications, and new compounds will target specific brain mechanisms involved in drug abuse, Dr. Kleber predicted. Research to develop such



Dr. Mary Ann Pentz discusses community-based drug abuse prevention programs.

compounds-especially compounds aimed at cocaine, for which there is no generally effective medication-will need to focus on the complex actions of drugs on multiple neurotransmitters in the brain, he said. The next few decades should see the development of vaccines that block the effects of drugs such as cocaine and PCP and medications with less toxicity and abuse potential than current ones, Dr. Kleber said.



Dr. Herbert Kleber tells symposium participants that effective drug abuse treatment will include both medications and behavioral interventions.

with various community segments to implement effective programs in Kansas City, Missouri, and Indianapolis, Indiana, but followup research indicates that the effort paid off in long-term reductions in drug use and other problem behaviors among children and adolescents.

"If all 11-year-old children in the U.S. participated in a similar prevention program, it would save \$5.6 billion in alcohol- and drug-abuse-related costs by the time those children reach age 25," Dr. Pentz estimated.

In the past, drug abuse prevention efforts focused on increasing the public's knowledge about the dangers of drug abuse. Today, research-based prevention approaches focus on counteracting the personal, social, and environmental factors that influence children and adolescents to use drugs, according to **Dr. Mary Ann Pentz** of the University of Southern California in Los Angeles. "Community-based prevention programs must have multiple components, involve all segments of the community, encompass different settings, and administer periodic booster sessions to effectively address multiple risk factors and reinforce community-wide norms against drug use," she said.

Implementing broad-based community programs takes time, Dr. Pentz noted. For example, it took 5 years of working

**"NIDA's solid scientific research effort serves as a basis for community and school-based programs that work in preventing drug abuse generally and, more important, in preventing drug abuse among the Nation's youth."**

**Director of the White House Office  
of National Drug Control Policy  
General Barry McCaffrey**

Since the onset of the AIDS epidemic in the mid-1980s, drug abuse research has made many

contributions to preventing AIDS and increasing understanding of how the disease progresses, said **Dr. David Vlahov** of the New York Academy of Medicine in New York City. Dr. Vlahov noted that studies have shown that a variety of drug abuse practices-such as sharing syringes, frequent injection, and injecting drugs in "shooting galleries"-are key risk factors for transmitting HIV. Recent research indicates the risk of becoming infected with HIV is particularly high when drug users first begin to inject drugs. "This finding underscores the importance of early targeted prevention efforts," Dr. Vlahov said. A comprehensive prevention approach that includes drug abuse treatment; HIV testing, counseling, and education; outreach to drug users not in treatment; behavioral strategies; and needle exchange is effective in reducing the spread of HIV, Dr. Vlahov said.

The development of potent anti-viral medications in recent years has made possible a new strategy to prevent transmission of HIV by injecting drug users (IDUs) who are already infected, Dr. Vlahov said. "We want to get more IDUs into therapy and maximize their adherence," he said. "Research shows that these medications can significantly reduce viral load in drug users, dramatically lowering the risk of transmitting the disease." Additional efforts are needed to increase HIV-positive IDUs' access to these medications, achieve strict adherence to rigorous medication regimens, assess whether injecting drugs increases HIV's resistance to the medications, and evaluate interactions between anti-HIV medications and drug abuse treatment medications, he said.

**Dr. Huda Akil**, of the University of Michigan in Ann Arbor, focused on the neurobiology of stress and depression and the biology of endorphins and other molecules related to substance abuse. Dr. Akil described results of NIDA-supported research into the effects of stress on drug-taking behavior and the neurobiological basis of individual differences in this interaction. "A research approach that attempts to understand the biological bases of emotional behavior will expand our understanding of the role of emotion in drug abuse as well as other areas of health and illness," Dr. Akil said.

**"NIDA is the world's leading brain trust on the causes and consequences of drug abuse. This is a remarkable legacy, combining rigorous science and human compassion to loosen the grip of drug addiction. NIDA has helped clarify how and where drugs work in the brain to cause their addictive effects. NIDA has provided complex models to improve treatment and rehabilitation strategies. The Institute has produced groundbreaking work on nicotine addiction.**

**"These are critical discoveries of science, but they don't do justice to the deeper nature of NIDA's work—the human element. Thanks to NIDA's bold and brilliant work, we are beginning to more clearly understand the lure of illicit drugs and how they seduce human beings into risking their health, the fabric of their relationships, their very lives."**

**Secretary of Health and Human Services  
Donna E. Shalala**

**Dr. Hans Breiter**, a NIDA-supported researcher at the Massachusetts General Hospital in Boston, described the role of brain imaging techniques in drug addiction research. The development of new pharmacological treatments for drug abuse will rely on imaging techniques to illuminate specific brain mechanisms, Dr. Breiter said. The techniques allow researchers to identify the specific brain regions affected by drugs, an important preliminary step in the development of agents that can repair a brain changed by chronic drug use.

**Dr. Floyd Bloom**, editor-in-chief of *Science* magazine and chairman of the department of neuropharmacology at The Scripps Research Institute in La Jolla, California, noted that NIDA's history has been marked by surprising discoveries that shape and focus drug abuse research. "The discovery and description of the molecular structure of opiate receptors in the brain was a momentous milestone in science," Dr. Bloom said. "We now know that receptor sites are only a small part of 'reward circuits' that play crucial roles not only in drug abuse but in hunger, thirst, and pleasure. There is still much we don't know," he said. "What specific molecular events in cells and circuits throw the 'switch' that results in a transition from drug use to abuse and dependence? What conditions predispose some individuals to vulnerability to drugs?" The answers, Dr. Bloom told the audience, will be found by continuing NIDA's 25-year history of neuroscience research.

**"NIDA was established to bring the power of science to bear on the Nation's drug abuse problems, and the first 25 years of this crucial investigation have produced groundbreaking discoveries about the nature of drug abuse. We have established the reality that drug abuse is not a moral flaw or a simple behavioral problem. It is a brain disease with biological causes and consequences as well as profound and complex social and behavioral components."**

**NIDA Director, Dr. Alan I. Leshner**

**Dr. Jose Szapocznik**, director of the Center for Family Studies at the University of Miami, described the influences that lead to adolescent drug use and summarized key components of successful prevention programs.

"Parents' involvement in the lives of their children is by far the strongest and most important factor in preventing adolescent drug use," Dr. Szapocznik said. Typically, young people begin using drugs for one of two reasons: in response to social norms or because they are troubled, Dr. Szapocznik noted.

"For adolescents, social norms are a tide that lifts all boats," he said. "Kids respond to an environment in which drug use is accepted or glamorized by taking drugs. Troubled kids use drugs because they want to feel better."

The key to preventing drug use is a family environment marked by open communication, effective management of complex social and academic issues confronting young people, and a clear message that drug use is harmful and unacceptable, Dr. Szapocznik said.

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