NIDA
NATIONAL INSTITUTE
ON DRUG ABUSE

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NewsScan

NIDA ADDICTION RESEARCH NEWS

NEWS UPDATE

NIDA News

Dr. Nora D. Volkow Named Director of NIDA

Nora D. Volkow, M.D., has been appointed the new director of NIDA by National Institutes of Health Director Dr. Elias A. Zerhouni. She is expected to assume her duties on April 15, 2003.

As the first woman to head NIDA, she replaces Glen R. Hanson, Ph.D., D.D.S., who has served as NIDA's Acting Director since the resignation of NIDA Director Dr. Alan I. Leshner in 2001.

Dr. Volkow is recognized as an expert on the neurobiology of addiction. She is particularly known for her work investigating the mechanisms underlying the reinforcing, addictive, and toxic properties of drugs of abuse in the human brain. As a researcher, she has been supported by grants from NIDA, the National Institute on Alcohol Abuse and Alcoholism, and the Department of Energy. A recipient of multiple awards, she was elected to membership in the Institute of Medicine, National Academy of Sciences, and was named "Innovator of the Year" in 2000 by *U.S. News and World Report*.

Dr. Volkow is currently Associate Director for Life Sciences at Brookhaven National Laboratory (BNL), Director of Nuclear Medicine at BNL, and Director of the NIDA-DOE Regional Neuroimaging Center at BNL. She also is a professor in the Department of Psychiatry and Associate Dean for the Medical School at the State University of New York-Stony Brook.

Dr. Volkow received her B.A. from Modern American School, Mexico City, Mexico, M.D. from the National University of Mexico, Mexico City, and postdoctoral training in psychiatry at New York University.

Research News

Stimulant Treatment of Children with ADHD Reduces Subsequent Substance Abuse

A study by researchers at Harvard University has provided more evidence that using stimulant medications such as methylphenidate to treat children with attention-deficit/hyperactivity disorder (ADHD) may reduce their risk of developing drug and alcohol use disorders later in life.

Dr. Timothy Wilens, lead investigator, and colleagues used a statistical method called meta-analysis (an examination of whether data compiled from multiple scientific studies provides evidence for statistical significance) to evaluate the relationship between stimulant therapy and subsequent substance use disorders (SUD) in youths with ADHD. After searching the literature for studies of children, adolescents, and adults with ADHD that had information on childhood exposure to stimulant therapy and later SUD outcomes, the researchers applied meta-analyses to six long-term studies. Two studies followed patients into adolescence and four followed patients into young adulthood. These studies comprised data from 674 youths receiving medication therapy for ADHD and 360 unmedicated youths with ADHD. Of those receiving medications, 97 percent were taking the stimulants methylphenidate or amphetamine.

From the compiled data, researchers found that youths with ADHD who were treated with stimulants had an almost two-fold reduction in the risk for developing SUD when compared with youths with ADHD who did not receive stimulants. Examination of each study individually suggested that stimulant medications might have a protective effect against the development of SUD.

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Analysis of studies that reported follow-up into adolescence revealed that youths treated with stimulants were 5.8 times less likely to develop SUD than those not treated. However, analysis of studies that followed subjects into adulthood found that those treated with stimulants were about 1.5 times less likely to develop SUD. The researchers say that the less robust effect during adulthood may have occurred because the patients discontinued stimulant treatment when they reached a certain age or that parents may closely monitor the medications of youths with ADHD.

- **WHAT IT MEANS:** Overall, treating ADHD pharmacologically appears to reduce the risk of substance abuse by half. Untreated, ADHD is associated with a two-fold increased risk for developing a substance abuse disorder. Hence, while not truly immunizing against substance abuse, treating ADHD pharmacologically reduces the risk for drug and alcohol abuse and addiction to the level of risk faced by the general population. The report's findings are among the most robust in child psychiatry demonstrating a protective effect of pharmacological treatment on reducing the risk for later substance abuse.

The study, funded by the National Institute on Drug Abuse (NIDA), is published in the January 6, 2002, issue of *Pediatrics*.

Women Who Abuse Drugs Are At High Risk For Serious Injury or Trauma

Women who are chronic drug users are almost 70 percent more likely to have experienced serious injury or trauma during the past year and almost 20 percent more likely to have experienced injury or trauma during their lifetime than women who do not use drugs. Injuries incurred and related trauma include broken bones, concussion, gunshot or knife wounds, or sexual assault.

These findings are based on data collected in 1996 and 1997 in Miami-Dade County, Florida, from 926 chronic drug users and from 553 people who did not use drugs. The sample included both men and women. Investigators analyzed the data to ascertain the effects of drug use on serious injury or trauma experienced any time in the past, within the past 12 months, and when individuals utilized health care services for serious injury or trauma.

Among women, 67 percent of the chronic drug users reported having a serious injury or traumatic event sometime in their life, compared with 55 percent of the women who did not use drugs. Twenty-nine percent of the women who abused drugs reported having experienced serious injury or a traumatic event within the past 12 months, compared with 16 percent of the women not using drugs.

Women in both groups, however, were very similar in their propensity to see a doctor or other health care provider for treatment of injury or trauma. Fifty percent of the women using drugs received treatment, compared with 57 percent among those who did not use drugs.

No statistically significant differences were found between the past year and lifetime prevalence of serious injury or trauma between male chronic drug users and non-users.

- **WHAT IT MEANS:** Because both female and male drug users reported high use of health care services for serious injuries or trauma, health care providers who work in community-based settings and acute care clinics should be aware that individuals seeking treatment for such injuries could be abusing drugs. Training in substance abuse issues would enable health care providers to better identify and treat drug abusers or refer them to appropriate treatment.

Silvana K. Zavala, M.P.H., University of Miami, and Michael T. French, Ph.D., Medical University of South Carolina, published the study in the February 2003 issue of *Medical Care*.

Cocaine Use May Alter Brain Cells, Play Role in Depression

A study by researchers from the University of Michigan and the Ann Arbor Veterans Affairs Medical Center suggests that chronic cocaine use may cause damage to brain cells that help produce feelings of pleasure, which may contribute, in part, to the high rates of depression reported among cocaine abusers. It is well-known that cocaine increases levels of the brain chemical dopamine, resulting in the "high" that abusers feel. Prolonged use of the drug, however, may reduce dopamine levels, making it harder for abusers to experience positive feelings.

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Dr. Karley Little, lead investigator, and colleagues studied samples of brain tissue obtained during autopsies of 35 long-term cocaine users and 35 non-users. They analyzed the tissue for dopamine and the protein VMAT2, which is found in dopamine transporters. Urine or serum samples were also analyzed for the presence of cocaine, opioids, antidepressants, and antipsychotic medications. A person close to each individual was interviewed about the individual's substance abuse, alcoholism, and symptoms of personality and mood disorders.

Researchers found that cocaine users had lower concentrations of dopamine and VMAT2 in their brains than did non-users. Additionally, cocaine users suffering from depression had lower levels of VMAT2 than those who were not depressed. Dr. Little and colleagues were uncertain whether dopamine cells had been destroyed or just dysregulated by cocaine use, and if such changes could be reversed.

- **WHAT IT MEANS:** These findings suggest that chronic cocaine use may cause changes in the brain that could make it harder for a person to feel a sense of pleasure. Further efforts at clarifying the detrimental effects of cocaine on brain cells may help in the development of effective treatment interventions and pharmacotherapies.

This study, funded in part by the National Institute on Drug Abuse, was published in the January 2003 issue of the *American Journal of Psychiatry*.

Study Links Ecstasy Use with Changes in Cardiovascular Function

Researchers have demonstrated that binge use of MDMA (ecstasy) can significantly alter cardiovascular function, including inducing cardiac arrhythmia and myocarditis, inflammation of the heart wall.

In rats injected with MDMA, the risk of cardiac arrhythmia increased and the pattern of mean arterial pressure (MAP) and fluctuations in heart rate changed after repeated MDMA binges. This finding indicates that MDMA has the potential to significantly alter cardiovascular function and to produce potentially serious cardiovascular toxicity.

Scientists employed radiotelemetry to chart the changes in the rats' arterial blood pressure and heart rate during three MDMA binges. Each binge was separated by a 10-day period of abstinence and consisted of administering 3 or 9 mg/kg of MDMA twice daily for four days. Researchers say that the 3-mg/kg dose of MDMA used in the study is within the range of human recreational doses. The pattern of drug bingeing followed by a period of abstinence also is characteristic of the drug's use by humans.

No significant differences were seen in the resting levels of MAP or heart rate before each of the three MDMA binges or 10 days after the third binge. In the first binge, the intravenous administration of 3 or 9 mg/kg of MDMA increased MAP and produced an episode of slowed heart rate (bradycardia) followed by rapid heart rate (tachycardia). After repeated dosing, the pattern of MAP and heart rate responses elicited by MDMA changed from that typically induced by a stimulant to one resembling the vasovagal reflex—a decrease in heartbeat and in MAP.

- **WHAT IT MEANS:** This is the first study to examine the cardiovascular responses elicited by the binge pattern of chronic MDMA use and the first report showing that the binge administration of MDMA can produce toxic inflammation in the ventricles of the heart. The study's findings indicate that MDMA users may be risking damage to their cardiovascular systems.

The study was reported in the September 2002 issue of *The Journal of Pharmacology and Experimental Therapeutics* by a research team headed by Kurt J. Varner of the Louisiana State University Health Sciences Center.

More NIDA News

NIH Sponsors March 12th Symposium For *Brain Awareness Week*

Researchers have long known that stress and coping ability can have a great impact on health. To commemorate *Brain Awareness Week* (March 10-16, 2003), the National Institutes of Health will hold a symposium on Wednesday, March 12, 2003, from 8:30 a.m. – 1:00 p.m. to focus on the various ways that stress can affect the brain and the body. The meeting will be held at the William H. Natcher Conference Center, National Institutes of Health, Bethesda, MD.

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Speakers will discuss the impact of stress on brain function, the neurobiology of fear and emotion, and the role of trauma in mental health and substance abuse disorders.

Brain Awareness Week is a nationwide effort, organized by the Dana Alliance for Brain Initiatives, to promote the public and personal benefits of brain research.

NIDA is coordinating this year's *Brain Awareness Week* activities at NIH, in partnership with NIH's National Institute on Aging; National Institute on Alcohol Abuse and Alcoholism; National Institute of Child Health and Human Development; National Institute on Deafness and other Communication Disorders; National Institute of Dental and Craniofacial Research; National Institute of Mental Health; National Institute of Neurological Disorders and Stroke; National Institute of Nursing Research; National Eye Institute; and National Heart, Lung, and Blood Institute.

NIDA 2003 Calendar for Asian Americans and Pacific Islanders Still Available

Limited quantities of NIDA's special calendar for Asian Americans and Pacific Islanders (AAPIs) are still available. The calendar was developed as part of NIDA's ongoing initiative to raise awareness among targeted cultures in the United States about the health risks of drug abuse and addiction.

Reflecting the creative recommendations of leading AAPI individuals and organizations nationwide, the rich histories of the many Asian, Native Hawaiian, and other Pacific Islander cultures are captured in each month's graphics and text selections, several of which include translations.

"The calendar beautifully weaves together the richness of Asian American and Pacific Islander life, with messages about the importance of drug abuse prevention and drug addiction treatment," said Dr. Glen R. Hanson, NIDA's Acting Director.

The AAPI calendar is patterned after NIDA's previous calendars for American Indians and Alaska Natives. It serves as a science-based resource on drug information, providing families and teachers with useful information to help them speak to children about the dangers of drug abuse in a way that incorporates the cultural richness and diversity of Asian Americans and Pacific Islanders.

Free copies of the calendar are available through the National Clearinghouse for Alcohol and Drug Information, at 1-800-729-6686 or **www.health.org**, by asking for publication number AVD153. It also can be downloaded from the NIDA Website at **www.drugabuse.gov**.

For more information about any item in this *NewsScan*:

- **Reporters**, call **Michelle Person** at 301-443-6245.
- **Congressional staffers**, call **Mary Mayhew** at 301-443-6071.

The National Institute on Drug Abuse (NIDA) is a component of the National Institutes of Health, U.S. Department of Health and Human Services. NIDA supports more than 85 percent of the world's research on the health aspects of drug abuse and addiction. The Institute carries out a large variety of programs to ensure the rapid dissemination of research information and its implementation in policy and practice. Fact sheets on the health effects of drugs of abuse and other topics are available in English and Spanish. These fact sheets and further information on NIDA research and other activities can be found on the NIDA home page at **http://www.drugabuse.gov**.

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