

### Research News

#### Teen Drug Use Linked with Later Health Problems

A long-term study has linked adolescent drug use with health problems in early adulthood. Subjects in their mid-to-late twenties who had used drugs as teens reported more health problems than those who had never used drugs. Health problems included: increased incidence of respiratory conditions, such as colds and sinus infections; cognitive problems, such as difficulty in concentrating, remembering, and learning; and headaches, dizziness, and vision problems.

The NIDA-funded study found also that rebelliousness, distrust of authority, and risk-taking behavior in early adolescence and peer influences in middle adolescence were precursors to later drug use, which, in turn, led to increased health problems.

These findings are from a 22-year study that tracked the self-reported substance abuse and health histories of more than 600 youths through their early- and mid-teen years into early adulthood. Scientists from the Mount Sinai School of Medicine and Columbia University started collecting data on the children in 1975, when the subjects were one through 10 years of age. Four follow-up interviews were conducted in 1983, 1986, 1992, and 1997. By the time of the last interview, the average subject was 27 years old.

- **WHAT IT MEANS:** This study adds to the body of research about the long-term public health consequences of drug abuse and the importance of early intervention to prevent adolescent drug abuse.

Lead investigator Dr. Judith S. Brook published the study in the June 2002 issue of the *Journal of Adolescent Health*.

#### Methamphetamine, Cocaine Abusers Have Different Patterns of Drug Use, Suffer Different Cognitive Impairments

Studies supported by NIDA show that methamphetamine abusers typically use the drug 20 days per month, beginning early in the morning and using it at regular intervals throughout the day. In contrast, cocaine abusers are more likely to exhibit a "binge" pattern. They use the drug fewer days per month, typically in the evening rather than in the daytime, and use it continuously over several hours. Both drugs cause deficits in measures of reasoning and concentration, but methamphetamine abusers perform more poorly than cocaine abusers on tests measuring perceptual speed and the ability to manipulate information, according to Dr. Sara Simon of the University of California, Los Angeles.

The typical methamphetamine abuser reported using the drug when he or she first got up in the morning and then using it approximately every two to four hours during the waking day. Most of the descriptions of use more closely resembled taking a medication than using a drug for pleasure. Cocaine abusers, however, reported patterns of use that began in the evening and continued until all the cocaine had been used.

Both drugs are associated with similar cognitive deficits, although some types of impairment differ. The most striking difference is that methamphetamine abusers had more trouble than cocaine abusers with tasks requiring attention, organizing information, and switching points of view.

- **WHAT IT MEANS:** These studies add important details to our understanding of the real-world characteristics of methamphetamine and cocaine use. This understanding can be incorporated into the development of treatment strategies that help abusers avoid or cope with situations that put them at risk for relapse and give them behavioral tools they can learn, understand, and apply in those situations.

Dr. Simon and her colleagues described their findings in a special methamphetamine issue of *Journal of Addictive Diseases* (Vol. 21, Number 1, 2002).

### **Methadone Treatment May Improve Completion of Tuberculosis Therapy in Injection Drug Abusers**

Researchers from the State University of New York Upstate Medical University in Syracuse and the University of California, San Francisco, have found evidence that methadone treatment programs are effective platforms for providing tuberculosis (TB) preventive therapy to substance abusers. In the study, methadone treatment combined with directly observed TB preventive therapy improved adherence to and completion of TB preventive therapy by injection drug abusers.

Previous research has shown that under normal treatment conditions, substance abusers are more likely to miss doses of the TB medication isoniazid (INH) and that direct observation of preventive treatment is less effective in substance abusers than in other TB-positive individuals.

In the study conducted by Dr. Steven L. Batki at San Francisco General Hospital, 111 opioid-dependent patients with latent TB infection were randomly assigned to receive one of three treatments:

- standard methadone treatment—substance abuse counseling and directly observed daily INH;
- minimal methadone treatment—directly observed INH but with no counseling; and
- routine care—referral to TB clinic for monthly visits for 30-day supplies of INH without direct observation of medication ingestion or methadone treatment.

More than 77 percent of patients receiving minimal methadone treatment and over 59 percent of those receiving standard methadone treatment completed their INH therapy, whereas less than 14 percent of those receiving routine care completed INH therapy. On average, patients receiving both forms of methadone treatment stayed in INH therapy more than five months, while those receiving routine TB treatment stayed in treatment less than two months.

- **WHAT IT MEANS:** The findings from this study indicate that methadone treatment offers public health benefits when it is used to deliver preventive medical services to substance abusers.

Dr. Batki, the lead investigator for the study, reported the findings in the May 2002 issue of *Drug and Alcohol Dependence*. Dr. Batki is now at SUNY Upstate Medical University.

### **Research Helps Explain Why Perception of Pleasure Decreases With Chronic Cocaine Use**

Investigators demonstrated in rats that repeated starting and stopping of cocaine use decreased the brain's reward function and reduced the pleasurable effects of cocaine. This decrease in pleasure-perception was highly correlated with escalation of cocaine intake.

The persistence of this pleasure deficit after stopping prolonged cocaine use may be part of the neurobiological basis for the continued craving and increased vulnerability to relapse associated with drug addiction.

The study's findings also show that tolerance does not result from a decreased effect of cocaine on basal reward thresholds, but results instead from the establishment of a new basal reward threshold, above the initial threshold. As a result, more doses are progressively needed to maintain the same hedonic effect, thereby further aggravating the dysregulation of brain reward function.

Changes in pleasure thresholds were only observed in animals that developed excessive levels of cocaine intake. Those that developed stable and moderate levels of cocaine intake did have altered pleasure perception. Thus, a chronic shift in pleasure thresholds appears to be one of the neurobiological signatures of the transition to addiction.

- **WHAT IT MEANS:** Based on this study, it appears that promising new therapies for addiction may be based on treatments that mute the desire to escalate cocaine intake by blocking the elevation of brain reward thresholds produced by chronic cocaine use.

Serge H. Ahmed, Paul J. Kenny, and colleagues from the University of Bordeaux, France and The Scripps Research Institute in LaJolla, California published the study in the July 2002 issue of the journal *Nature Neuroscience*.

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## New Publication

### NIDA Launches New Publication for Researcher-Provider Dialogue

NIDA is launching *Science & Practice Perspectives*, a new publication that will promote a practical, creative dialogue between researchers and treatment providers. Published twice a year, the exchange of information, observations, and insights is expected to help clinicians maximize their programs and treatment outcomes, while helping researchers construct new hypotheses and design studies relevant to the needs of providers and patients.

The peer-reviewed journal will feature:

- Researchers' up-to-the-minute reviews of the most critical topics in the science of prevention and treatment;
- Service providers' perspectives on what works and can work in diverse community treatment settings;
- Roundtable discussions that probe and amplify the points in each article and elaborate the practical implications for both researchers and service providers;

Volume 1, Issue 1 of *Perspectives* will be mailed to 20,000 drug abuse researchers and prevention/treatment providers nationwide in July 2002. Additional subscriptions for individuals and organizations are available. No-cost subscriptions can be ordered from MasiMax Resources, Inc., by mail or through the online order form at NIDA's Web site, [www.drugabuse.gov](http://www.drugabuse.gov). To order by mail, send the request to: Subscriptions Department, MasiMax Resources, Inc., 1375 Piccard Drive, Suite 175, Rockville, MD 20850.

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The National Institute on Drug Abuse 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 can be ordered free of charge in English and Spanish by calling *NIDA Infofax* at 1-888-NIH-NIDA (644-6432) or 1-888-TTY-NIDA (889-6432) for the deaf. 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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The National Institute on Drug Abuse  
is a component of the National Institutes of Health,  
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES.

