

NewsScan

NIDA ADDICTION RESEARCH NEWS

HIV ISSUE

Research News

Bacterial Infections Pose Major Risks for Drug Abusers

In a recently published review article, scientists say that people who abuse drugs often are vulnerable to bacterial infections, including strains that are resistant to the most powerful antibiotics. Certain antibiotic-resistant bacterial infections have been reported among men who have sex with men who use crystal methamphetamine.

Smoking and inhaling a drug and then expelling the smoke into another person's mouth can transmit bacteria that cause lung diseases. Other infections may be caused by bacteria that normally reside on a person's skin and enter the muscle tissue through injection. Pathogens may be inadvertently mixed with a drug of abuse and travel through a syringe. Also, an association may exist between infections caused by *Clostridia*, which causes botulism, and black tar heroin, a form of heroin produced in Mexico.

Infections that may develop include: infective endocarditis, a potentially fatal infection that can damage or destroy the heart valves; pulmonary tuberculosis; wound botulism caused by *Clostridia* (untreated botulism may progress to paralyze the limbs, trunk, and respiratory muscles, and can result in death due to respiratory failure); necrotizing fasciitis, known as the "flesh-eating disease;" soft tissue infections caused by "skin popping" (injecting under the skin or into the muscle); and skin infections caused by an antibiotic-resistant strain of bacteria.

- **WHAT IT MEANS:** Infections are among the most serious complications of drug abuse, and people who abuse drugs risk contracting numerous and varied bacterial infections, for which there may be few effective treatments. Although injection drug use is a major path for bacterial infection, drug abusers who do not inject also are at risk. Eliminating drug abuse is the surest way to control the associated infections.

Dr. Rachel Gordon and Dr. Franklin Lowy of Columbia University published their review in the November 3, 2005 issue of the *New England Journal of Medicine*.

Improving HIV/AIDS Knowledge in Treatment-Seeking Cocaine Abusers

A brief educational intervention can increase HIV/AIDS knowledge among cocaine abusers in outpatient treatment.

Knowledge levels of HIV/AIDS were assessed in 83 adult cocaine abusers in outpatient treatment through completion of the Kelly and Marsch tests (multiple item, true-false tests designed to measure knowledge in three general areas: high-risk sexual and drug practices, risk-reduction steps, and misconceptions about HIV/AIDS). They then were divided into two groups. Members of the experimental group viewed a 12-minute HIV/AIDS education video and met individually with a counselor to review an educational pamphlet on HIV/AIDS. Members of the control group viewed a 10-minute excerpt of a video on the psychopharmacology of cocaine and met individually with a counselor to review a pamphlet on the psychopharmacology of stimulants. Members of both groups again completed the two tests immediately after meeting with the counselors.

The researchers reported that participants in the experimental group had higher test scores following the intervention than participants in the control group. Scores of participants in the control group also increased after crossing over and receiving the same HIV/AIDS intervention.

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NEWS UPDATE

- **WHAT IT MEANS:** The results suggest that a brief educational intervention can increase HIV/AIDS knowledge among drug abusers. Although education alone may be insufficient to drive behavior changes, a brief intervention such as this may serve as a component of more extensive interventions.

Dr. Sarah Heil and her colleagues at the University of Vermont published their findings in the August 2005 issue of *Experimental and Clinical Psychopharmacology*.

Mouse Study Reveals Mechanisms By Which Cocaine Strengthens HIV Infection

Researchers who previously used a mouse model to confirm that cocaine increases the rate at which HIV replicates now have identified pathways and mechanisms responsible for this increase.

Working with genetically engineered mice that have deficient immune systems, Dr. Gayle Baldwin and her colleagues at the David Geffen School of Medicine at UCLA created a practical animal model to study the effects of cocaine on HIV infection.

Based on previous studies suggesting that the immune-suppressing effects of cocaine are mediated through cell-surface proteins called sigma-1 receptors, the UCLA scientists hypothesized that sigma-1 receptors were directly involved in the cocaine/HIV interaction. To test this hypothesis, they treated HIV-positive mice for 10 days with daily injections of saline, cocaine, a sigma-1 blocker called BD1047, or a combination of cocaine and BD1047. Dr. Baldwin and her colleagues observed that the combination of BD1047 and cocaine blocked the impact of cocaine on HIV replication.

- **WHAT IT MEANS:** The findings suggest that the dynamic interaction between cocaine and HIV, which ultimately results in enhanced HIV replication, is accomplished in part through activation of sigma-1 receptors. Blocking sigma-1 receptors may diminish the effects of cocaine on HIV replication.

The study was published in the December 2005 issue of the *Journal of Leukocyte Biology*.

Russian Medical System Needs To Adapt to Co-Occurring Drug Abuse, Infectious Diseases

An analysis of co-occurring heroin dependence and infectious diseases in St. Petersburg, Russia and the surrounding area indicate that drug addiction in this country frequently co-occurs with HIV, hepatitis, and tuberculosis. This presents a serious problem to a medical system that is organized around treating specific diseases, with little focus on treating multiple disorders simultaneously.

Dr. George Woody, of the University of Pennsylvania School of Medicine, and his colleagues at Boston University and St. Petersburg State Pavlov Medical University, examined databases that reflected regional drug dependence, and also assessed personal records of HIV-positive patients from city and regional addiction treatment centers.

The St. Petersburg Addiction Center treated 10,742 patients between 1997 and 2001. In 1997, virtually none of the heroin-dependent patients had HIV; in 2001, this had risen to almost 19 percent. Similarly, the Leningrad Regional Center of Addictions (LRCA) treated 3,162 patients between 1997 and 2003—the percentage with HIV increased from zero in 1997 to 40 percent in 2003. In addition, data from the LRCA show that hepatitis C was found in 85 percent of drug-dependent patients in 2003. Evidence of hepatitis B infection was seen in 9 percent of drug-dependent patients and 11 percent of those who were alcohol-dependent.

- **WHAT IT MEANS:** The data show that substance use disorders and infectious diseases constitute parallel and overlapping epidemics in this region. Educational programs aimed at the general public are needed, along with prevention and treatment programs that cross the lines of specific disease boundaries.

The research, which was funded in part by NIDA, was published in the December 2005 issue of *European Addiction Research*.

Funding News

Noninjection Drug Abuse and HIV/AIDS (PAS-06-054)

Surveillance data from the U.S. Centers for Disease Control and Prevention have revealed a shift in the demographics of populations at risk for HIV/AIDS. These data have shown substantial increases in the proportion of new HIV/AIDS diagnoses among women, racial and ethnic minorities, lower income groups, and young men who have sex with men. Heterosexual contact has become the leading cause of new HIV infections among women, particularly within minority communities.

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This program announcement (PA) seeks to understand how noninjection drug abuse contributes to the acquisition, transmission, and progression of HIV/AIDS.

Examples of research projects eligible for funding under this announcement include:

- how drug intoxication or withdrawal states affect impulsivity and decisionmaking;
- studies of the effects of drugs on viral replication, cell entry, or spread to specific reservoirs, including the brain;
- examining how noninjection drugs of abuse affect the development of neural structures, circuits, and systems and associated cognitive and emotional processes in adolescents and young adults;
- characterizing how antiretroviral therapy may interact with drugs of abuse, how it affects willingness to engage in risky sexual behaviors, and how this therapy alters perceptions of risk and vulnerability; and
- research that develops and tests new behavioral prevention interventions to lessen drug abuse and the spread of sexually transmitted diseases and HIV.

For more information about this PA, go to <http://grants.nih.gov/grants/guide/pa-files/PAS-06-054.html>.

Health Disparities in HIV/AIDS: Focus on African-Americans (PA-06-069)

Blacks have experienced high rates of new HIV infections and worse survival rates than other racial and ethnic groups in the United States. These disparities require focused research to better understand their underlying factors, and to help scientists develop interventions to stem the spread of this infection among this group.

Injection drug use is the second leading cause of HIV infection among black women, and the third leading cause of HIV infection among black men. Noninjection drug use also is strongly associated with HIV/AIDS in inner-city communities.

The purpose of this program announcement (PA) is to encourage drug abuse and mental health researchers to better understand these HIV/AIDS disparities. Examples of appropriate research projects include:

- studying factors that give rise to risk-taking in blacks and testing interventions that have the potential to reduce these behaviors over a sustained period;
- developing interventions that encourage HIV testing and early treatment for AIDS, drug abuse, and related co-occurring conditions;
- identifying factors that influence adherence to HIV treatment regimens among people who abuse drugs;
- examining the impact of incarceration and criminal justice supervision on drug use and HIV infection; and
- developing effective and culturally relevant HIV prevention programs for black drug users in the criminal justice system.

For more information about this PA, go to <http://grants.nih.gov/grants/guide/pa-files/PA-06-069.html>.

Campaign News

NIDA Sends Teens Message about the Link Between Drug Abuse and HIV

"Drug Abuse and HIV: Learn the Link" is the message of a new public awareness campaign announced in late fall by NIDA.

Research has shown that a significant proportion of young people are not concerned about becoming infected with HIV. In recent years, the number of young people in the United States diagnosed with AIDS rose substantially. Because drug abuse encourages risky behaviors that can promote HIV transmission, NIDA views drug abuse treatment as essential HIV prevention.

NIDA and partnering organizations—including the American Academy of Child and Adolescent Psychiatry (AACAP), the AIDS Alliance for Children, Youth & Families, and the United Negro College Fund Special Programs Corporation—are working together to get this important message about the link between drug abuse and HIV to teens and young adults.

In addition to public service announcements distributed to television stations across the country, NIDA has launched a Web site, www.hiv.drugabuse.gov that provides the latest scientific findings on the relationship between drug abuse and HIV. One item on the Institute's new Web site is its recently released *HIV/AIDS Research Report*, which provides an overview of the latest NIDA-supported research into the multiple ways in which drugs of abuse contribute to the spread of HIV.

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For example, the *Research Report* notes that while intravenous drug use is well known in this regard, less recognized is the role that drug abuse plays more generally in the spread of HIV by increasing the likelihood of risky behaviors. This is because of the intoxicating effects of many drugs, which can alter judgment and inhibition and lead people to engage in impulsive and unsafe behaviors.

MORE DRUG ABUSE NEWS

National Inhalants & Poisons Awareness Week

The National Inhalant Prevention Coalition (NIPC) is sponsoring National Inhalants & Poisons Awareness Week (NIPAW) March 19–26, 2006. This annual program is designed to increase understanding about the abuse and risks of inhalants. To help generate recognition and understanding of the problem, a news conference with NIDA Director Dr. Nora D. Volkow will be held on Thursday, March 16. For more information about inhalants, go to NIDA's Web site www.drugabuse.gov. For more information about the NIPC, go to www.inhalants.org.

Brain Awareness Week Coming

Brain Awareness Week (BAW), which raises public awareness and creates interest in brain and nervous system research, will take place March 13–19, 2006 in classrooms, laboratories, and lecture halls across the nation.

Sponsored by the Society for Neuroscience and the Dana Alliance for Brain Initiatives, the effort involves scientists, patient advocates, and members of healthcare organizations who organize educational events emphasizing the importance of basic neuroscience research. Activities include classroom visits, laboratory tours, lectures, and exhibits.

Many BAW activities are aimed at elementary, junior high, and high school audiences and serve to develop a budding interest in neuroscience among young people. School-age children often decide to study neuroscience in college after attending BAW events.

The campaign also informs legislators about the importance of supporting neuroscience research, investing in higher education, and contributing to technological developments to combat diseases of the brain and nervous system.

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

- Reporters, call Sara Rosario Wilson at 301-443-6245.
- Congressional staffers, call Geoffrey Laredo at 301-594-6852.

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 most 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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