

# NIDA NOTES

**Cocaine  
Research**

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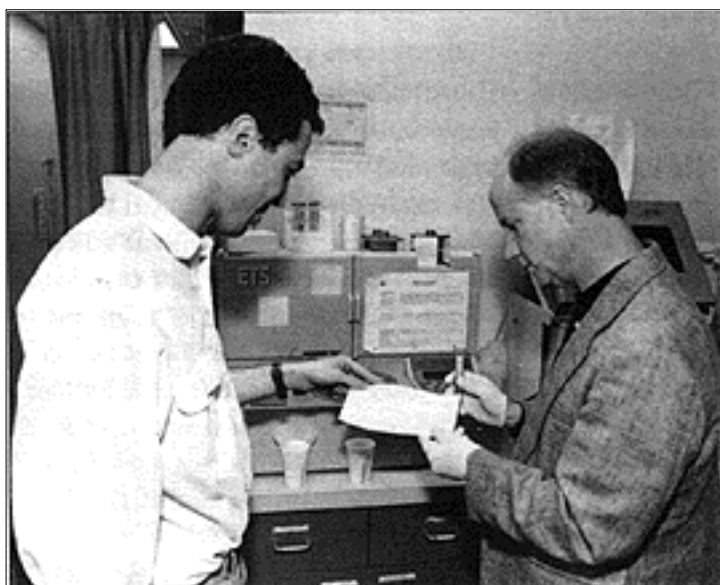
## Voucher System Is Effective Tool in Treating Cocaine Abuse

By **Michael D. Mueller**, NIDA Notes Contributing Writer

One of the biggest challenges in treating cocaine abuse is getting cocaine abusers to stay in treatment long enough to take the first difficult steps toward recovery. However, the voucher-based approach developed by Dr. Stephen T. Higgins and colleagues at the University of Vermont may help cocaine abusers take those vital first steps.

"This voucher-based strategy that has come out of Vermont represents important progress," says Dr. John J. Boren, the NIDA program officer overseeing this research. "The vouchers help hold cocaine abusers in treatment."

The Higgins approach allows cocaine abusers to build up points during outpatient treatment. The points, earned with urine specimens that test negative for cocaine, are recorded on vouchers, which can be exchanged for items that promote healthy living. These items include YMCA passes and continuing education materials.



***Dr. Stephen Higgins gives a patient a voucher that can be exchanged for items that promote healthy living. The voucher similar to the one shown further down the page, is earned with urine specimens that test negative for cocaine.***

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"Cocaine abusers never receive cash-only vouchers," emphasizes Dr. Higgins. "The patients and counselors must agree on the items to be purchased with the vouchers."

Urine specimens are collected three times a week, and the vouchers increase in value the longer the person stays off cocaine. Patients receive bonus vouchers at the end of the week if all three urine specimens have tested negative.

Cocaine is highly addictive; 1 to 2 million Americans are dependent on it. Up to 80 percent of cocaine abusers drop out of treatment programs, according to Dr. Higgins.

Further, Dr. Higgins points out, "The demand for cocaine abuse treatment is so large, and the environmental influence of the addiction process so powerful, that we must find ways to help cocaine abusers on an outpatient basis. Sure, we can treat them in the hospital, but then they return to their home communities, where they face old influences, often without alternatives and skills to withstand the lure of cocaine."

The voucher-based system creates an alternative, builds coping skills, and strengthens social relationships. The approach involves more than regular urine tests and vouchers for points. It also includes intensive counseling directed at employment, recreation, relationships, skills training, and structuring the day. Family and friends are brought into the counseling process. Patients who are alcohol dependent are also given Antabuse therapy to treat their dependence.

Thus, the Higgins approach to treating cocaine dependence focuses on behavior, creating paths for behavior change, rewarding positive change, and strengthening social relationships that reinforce healthy choices. The treatment package has several parts, but the voucher piece seems particularly strong, notes Dr. Higgins.

To many, stacking vouchers against cocaine addiction is like pitting David against Goliath. However, like David, the vouchers have proven to be more effective than expected.

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This voucher certifies that _____	
has received _____ points today, to equal	
a total of _____ points to date.	
Date: _____	Staff Signature: _____

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"It surprises many people that a stack of paper can outweigh the powerful urge to use cocaine," says

Dr. Higgins. "But it makes sense in terms of what we know about why people use drugs. Also, cocaine users reach a point where they want help."

The key to the success of the vouchers is that they have a "reinforcing effect" that competes with the one produced by cocaine use. They are an alternative that is available immediately, but only if cocaine is not used. This is the heart of the theory that drives the treatment strategy.

Cocaine produces powerful reinforcing effects. When cocaine abusers use cocaine, the drug acts directly on particular areas of the central nervous system, which makes the user want to use cocaine again, often producing cycles of intensive, repeated use or "binges."

The voucher, on the other hand, is reinforcement for not taking cocaine. Although the dollar value of the voucher may not be great, the value of this alternative, immediate reinforcer can be quite high.

"Many areas of research support the concept of alternative reinforcement as important to preventing and treating drug abuse," observes Dr. Higgins. "Quite simply, reinforcement is a basic principle of human behavior. When we're discussing cocaine use, we're talking about behavior that is very sensitive to its consequences."

Cocaine abuse is not guided by a moral compass or free will. The drug acts on "reward centers" in the brain. Further, some researchers believe that the effects of cocaine on these reward centers are just as powerful as the effects of food and sex, notes Dr. Higgins.

Dr. Higgins and his colleagues are searching for ways to apply these principles of behavioral pharmacology to drug abuse treatment.

Dr. Higgins is quick to point out that, "Though cocaine is a powerful reinforcer, its use is context-dependent. Usually, the lifestyles of cocaine abusers are in such a state that their natural reinforcers for healthy behavior are in disarray or not available.

"Cocaine abusers, and especially 'crack' abusers, often come from deprived environments," he says. "Many times, those neighborhoods provide an almost ideal environment for cocaine to exert its powerful reinforcing effects. There are few prosocial alternatives.

"We need to work toward creating environments in which those reinforcing effects are less powerful-in which people have positive, drug-free alternatives."

Dr. Higgins and his colleagues began researching the voucher-based strategy in 1990. First, they compared the behavior-change package to a more traditional outpatient counseling program in a study of 28 cocaine abusers over a 12-week period. The more traditional program operates on the premise that cocaine abuse is a treatable disease; it includes counseling, lectures, videotape presentations, self-help sessions, and working with a sponsor.

Eleven of the 13 patients assigned to the behavior change program completed 12 weeks of treatment, compared to 5 of the 15 patients in the traditional program. The researchers found that patients in behavioral treatment had significantly longer periods with cocaine-free urine. The findings were much the same for a subsequent study of 38 patients over 24 weeks.

Next, Dr. Higgins narrowed his research to the voucher part of the treatment program. He found that 90 percent in the voucher group completed a 12-week treatment program, compared to 65 percent in the no-voucher group. Over 24 weeks, 75 percent in the voucher group, versus 40 percent in the no-voucher group, completed treatment. When it came to continuous cocaine abstinence, the voucher group averaged 11.7 weeks; the no-voucher group, 6 weeks.

Recently, the researchers reported on a followup of patients who took part in the 24-week study. Cocaine use was evaluated 3 months and 6 months after the completion of the 24-week program. Again, the voucher-based behavioral package produced significantly greater cocaine abstinence than the more traditional approach.

Although the findings are encouraging, Dr. Higgins and others caution that most research to date has been on white males in Vermont, a rural State. Further studies are needed to determine the effectiveness of the vouchers over longer periods of time and among women, urban populations, and other cultural groups.

Dr. Higgins' research results are supported by those of Dr. Kenzie Preston of NIDA's Division of Intramural Research, Dr. Kenneth Silverman of Johns Hopkins University, and their colleagues, who found that the voucher system seems effective in treating inner-city cocaine abusers. (See [Inner-City Cocaine Abusers in Baltimore Respond to Voucher-Based Treatment](#))

"An immediate application of the voucher approach-which has demonstrated its short-term effectiveness-might be to reduce cocaine abuse among pregnant women," suggests Dr. Higgins. The voucher-based intervention could lead to healthier newborns. It would also be cost-effective, as neonatal intensive care units are extremely expensive, he says.

Some observers question the acceptability of "paying" cocaine abusers not to use cocaine. In answer, Dr. Higgins says, "We don't view it as paying them to do the right thing. No cash changes hands. We are finding ways to provide alternative positive reinforcement. We combine the vouchers with behavioral therapy so that when the vouchers are gone, the individual can then find support for a cocaine-free lifestyle among his or her natural resources."

Dr. Higgins' academic training dovetails with what he learned about drug abuse during his youth in Philadelphia. "I grew up around a lot of drug abuse. What I saw on the streets agrees with the scientific studies that tell us that there are things we should be doing to give young people alternatives to cocaine," he says.

"We need to look for forms of alternative reinforcement or incentive programs that can be used in community settings," he continues. "Perhaps local merchants would be willing to contribute goods and services. Access to sports facilities and coaches are examples of healthy alternatives. We need to think creatively."

## Sources

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