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Clean urine gets you points – and points mean prizes. **Stephen Higgins** and **Sarah Heil** describe an innovative approach to improving treatment outcomes.

Urine the money

voucher-based incentive scheme for drug treatment

THERE remains no consensus on how best to treat cocaine dependence. Some developing pharmacotherapies have shown promise, but this has not panned out in randomised clinical trials. But even if progress had been made, there would still be the need for pharmacotherapy to be combined with effective psychosocial treatments. So how best to encourage people to come forward and then to remain in treatment? One approach is the voucher-based incentive scheme.

This involves the delivery of monetary vouchers exchangeable for retail items. These are given out when a patient meets a predetermined therapeutic target, usually the provision of drug-free urine samples. Because patients must remain in treatment in order to collect vouchers for abstinence, and thereby increasing treatment retention.

Using vouchers as an incentive for abstinence was initially developed in the early nineties as a novel method to manage cocaine dependence in outpatient settings. In much of our research here in the US, voucher-based incentives have been used in combination with an intensive behavioural therapy know as the Community Reinforcement Approach (CRA). This involves non-using partners, friends or relatives in the counselling process.

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EVIDENCE

In our studies, two controlled trials examined the efficacy of this combined CRA+vouchers procedure by comparing it against standard outpatient drug abuse counselling. The first of these two trials assigned consecutive clinic admissions to the respective treatment groups. The second trial used random assignment. In both trials, the CRA+vouchers treatment was associated with longer periods of cocaine abstinence than standard counselling.

In the randomised trial, 68% of patients in the CRA+vouchers group achieved eight or more weeks of continuous cocaine abstinence versus 11% of those in the counselling group. Unfortunately, CRA is not addressed in this article and readers with specific interests in CRA should consult the therapy manual published by the National Institute on Drug Abuse.1

NEGATIVE = POSITIVE

In our clinic, urine specimens are collected from all subjects under staff observation on Mondays, Wednesdays, and Fridays during weeks one through to 12 and Mondays and Thursdays during weeks 13 through 24. Specimens are screened immediately. Cocaine-negative specimens earn points that are recorded on vouchers given to participants. Points are worth the equivalent of $0.25 each. Money is never provided

> **... this approach has now gone in many unexpected and interesting directions.**

directly to subjects; instead, staff members purchase retail items in the community on people's behalf.

The first negative specimen is worth 10 points or $2.50 in purchasing power. The value of vouchers for each subsequent consecutive negative specimen increases by five points (for example 15 point for the second, 20 points for the third and so on).

To further increase the likelihood of continuous abstinence, the equivalent of a $10.00 bonus is earned for each three consecutive negative specimens. Specimens that are cocaine-positive or failure to submit a scheduled specimen resets the value of the vouchers back to the initial $2.50 value. From which they can escalate again according to the same schedule. This reset contingency discourages resumption of drug use once abstinence is achieved.

Submission of five consecutive cocaine-negative specimens following submission of a positive specimen returns the value of the points to where they were prior to the reset. However points cannot be lost once earned. If patients earn all of the vouchers and bonuses possible, they earn a total of $997.50 in purchasing power. Average earnings among cocaine-dependent outpatients in our clinic have been about half of the total possible.

The efficacy of vouchers was first demonstrated in a randomised clinical trial in which outpatients were randomly assigned to receive CRA+vouchers or CRA only. The average duration of continuous cocaine abstinence documented via urinalysis in the two groups were 12 weeks in the vouchers group versus 6 in the no-voucher group.

The effects of the vouchers remained discernible from 12 weeks up to six months. Twelve weeks after the vouchers were discontinued, abstinence levels largely remained. Subsequent follow-up assessments from both groups comparing CRA+vouchers to drug abuse counselling suggested that effects continued through six months of post-treatment follow-up.

A fourth trial assessed whether contingent incentives directly reinforce cocaine abstinence in cocaine-dependent outpatients. Patients were randomly assigned to two groups. One received CRA with vouchers contingent on cocaine abstinence and the other received CRA with incentives provided independent of cocaine abstinence.

Contingent vouchers significantly improved cocaine abstinence. While 36% of the contingent group achieved more than 12 weeks of continuous abstinence only12% of the non-contingent group did so. Furthermore, these differences in abstinence persisted throughout a one-year post-treatment follow-up, with 19% of the contingent group reporting continuous abstinence one year after completing treatment, compared to 9% of the non-contingent group.

OTHER SETTINGS

The studies described above were all conducted in a university-based research clinic located in a small metropolitan area. It was important therefore to demonstrate the generality of the voucher-based intervention beyond this setting – particularly among patients residing in large metropolitan areas.

Studies by Silverman and colleagues in methadone-maintained cocaine abusers provided the first support for the generality of the voucher-based approach to another setting and population. In a seminal report that used a schedule largely identical to that used in our trials, cocaine abstinence levels increased significantly among those who received contingent vouchers but not those who received them non-contingently.

Two other trials both demonstrated the effectiveness of a similar schedule of vouchers in populations of cocaine-dependent adults treated in drug-free clinics in Camden, NJ and Los Angeles, CA. Together all these studies firmly established the generality of vouchers beyond our clinic and population. The efficacy of vouchers at increasing cocaine abstinence has led investigators to also examine their use with other forms of drug use. Positive outcomes were observed when vouchers were contingent on opiate-negative urinalysis results in individuals enrolled in methadone maintenance therapy. Results from controlled studies demonstrate that marijuana and alcohol use are sensitive to contingent incentives for abstinence – and that special groups such as the mentally ill and pregnant drug users can be similarly helped.

WHO'S GOT THE MONEY?

Importantly, the costs of vouchers in the smoking study were covered through donations from local health care organizations, businesses, and foundations. Combined with the results described above, these studies provide evidence of the efficacy of voucher-based approaches in challenging populations.

The costs associated with the vouchers intervention are recognized as a barrier to its dissemination to community clinics. To date, the vast majority of work in this area has been conducted through funds from research grants. We anticipate that should treatment outcome research continue to support the efficacy of incentives with special populations, there are practical ways to support them. The work of with pregnant women at least indicates that communities are willing to financially support such programs.

Alternative strategies are being examined with other populations. Research is looking into developing less costly incentive programs that community clinics might be able to support with existing revenue. They are examining the very promising approach of integrating incentives from drug abstinence with vocational training and paid employment.

Begun as a novel intervention for outpatient management of cocaine dependence, this approach has now gone in many unexpected and interesting directions. While we recognize the practical limitations faced by community substance abuse treatment programs, there appears little question that voucher-based interventions can significantly reduce drug use and improve substance abuse treatment outcome. ■

references

1 Budney, A.J. and Higgins, S.T. (1998) *Treating cocaine dependence: a community reinforcement plus vouchers approach.* Rockville, MD: National Institute on Drug Abuse.