

**A PILOT PROGRAM OF METHADONE MAINTENANCE IN A MEN'S PRISON IN  
SAN JUAN, PUERTO RICO**

Robert Heimer<sup>1,5</sup>

Holly Catania<sup>2</sup>

John A. Zambrano<sup>1</sup>

Arlyn Brunet<sup>3</sup>

Arturo Marti Ortiz<sup>4</sup>

Robert G. Newman<sup>2</sup>

1) Department of Epidemiology and Public Health, Yale University School of Medicine,  
New Haven, CT

2) Baron Edmond de Rothschild Chemical Dependency Institute, Beth Israel Medical  
Center, New York, NY

3) Carlos Albizu University, San Juan, PR

4) University of Puerto Rico, Chemical Forensics Laboratories, San Juan, PR

5) To whom correspondence should be addressed at Department of Epidemiology &  
Public Health, Yale School of Medicine, PO Box 208034, 60 College Street, New Haven,  
CT 06520-8034. Phone: 203-785-6732; Fax: 203-785-7552; E-mail:

robert.heimer@yale.edu.

## **ABSTRACT**

A pilot methadone maintenance program for heroin-dependent, sentenced inmates in a men's prison in San Juan, Puerto Rico was begun in the summer of 2002. During the summer of 2003, we collected data from all twenty program participants and a random sample of forty inmates not participating in the program. The data included (1) self-reports from inmates concerning their drug use, attitudes about drug treatment, and expectations about behaviors upon release from prison and (2) urine specimens for heroin and methadone testing. We found that the program enrolled inmates who had been heavy users of heroin and reduced their heroin use by more than 94%. There was a high correlation between self-report and urine test results. Participation in the program was associated with an increased acceptance among inmates of methadone maintenance as a prison-based treatment for heroin dependence. The program appears successful in reducing heroin abuse among heroin-dependent prisoners. Thus, prison officials have planned to expand their provision of methadone from the current ceiling of 24 inmates to treat 300 or more inmates.

## INTRODUCTION

Many of those arrested and incarcerated have a history of opioid abuse and, as a result, illicit use of heroin or other opioids in prison is common throughout the world (Dolan, Hall et al. 1996; van Haastrecht, Bax et al. 1998; Boys, Farrell et al. 2002; Calzavara, Burchell et al. 2003; Cravioto, Medina-Mora et al. 2003). In these regards, Puerto Rico and its prisons are no exception (Oficina Control Drogas 2001). Twice in the past five years, sampling of the inmate population in Puerto Rico for opiates in prisoners' urine revealed high levels of abuse. One large sample conducted by the Corrections and Rehabilitation Administration found that half of inmates had traces of opiates in their urine. In response, the Commonwealth of Puerto Rico launched a pilot program, Acuerdo de Superacion ("Agreement to Overcome"), combining methadone maintenance and psychosocial support services.

Methadone maintenance is the recognized standard of care for treating opioid addiction (Rettig and Yarmolinsky 1995; NIH Consensus Development Program 1997; Joseph, Stancliff et al. 2000). When maintenance therapy and psychological counseling are combined, treatment outcomes are optimized (McLellan, Arndt et al. 1993). In recent years, effective implementation of maintenance programs, most notably in the area of proper dosing levels, appears to have increased the success of maintenance therapy for the non-incarcerated population (D'Aunno and Pollack 2002). However, methadone maintenance is rarely available to prisoners. While some jails (short-term sentence and detention facilities) in the U.S. treat opiate addicted prisoners with methadone, with the exception of the Key Extended Entry Program ("KEEP") at Rikers Island jail in New York City, only inmates entering the jail already enrolled in methadone treatment can receive it in jail. Since 1987, KEEP has been maintaining inmates on methadone, referring them to community-based treatment programs upon discharge (Magura, Rosenblum et al. 1993). In contrast, methadone maintenance for

sentenced inmates in US prisons is unavailable except to pregnant, heroin dependent prisoners in some states. Therefore, Acuerdo de Superacion provides a unique American example of methadone maintenance in prisons.

Planning for a prison-based methadone maintenance program began as part of the initial efforts of the Commonwealth's comprehensive drug control strategy in early 2001 (Oficina Control Drogas 2001). The newly-formed Office of Drug Control identified a local substance abuse treatment expert who prepared the protocol for Acuerdo de Superacion, which was finalized in November, 2001 (Guzman 2001). The program was opened to house a maximum of 24 heroin-dependent inmates in August, 2002. During the summer of 2003, we undertook an independent process evaluation of Acuerdo de Superacion. Here we report on the quantitative data from interviews with and urine samples obtained from the patients in the program and inmates not enrolled in the program.

## **METHODS**

Study participants included the patients of Acuerdo de Superacion and a random sample of non-patient, sentenced inmates. The criteria for entry into Acuerdo de Superacion were: a history of using opiates and seeking some form of substance abuse treatment (generally detoxification) prior to incarceration; a DSM IV diagnosis of opiate dependence; a sentence with more than 24 month remaining; low- or medium security custody; being 21 years of age or older; not requiring special medical care; and free and informed consent. Both medication and psychological counseling were provided by ASSMCA, the Commonwealth's public substance abuse treatment service.

The latter sample of inmates not taking part in Acuerdo de Superacion was generated by pairing an alphabetical roster of all sentenced low- and medium-security inmates with a randomly generated list of numbers. Prison officials approached the

inmates in order, referring them to the study. We drew from the list until we succeeded in recruiting two inmates from the general population for each patient.

The interview covered illicit drug use prior to and while in prison, attitudes about methadone maintenance, history of substance abuse treatment prior to incarceration, and willingness to seek treatment. The patients were asked to rate program satisfaction and make suggestions for its improvement. Questions were adapted from previous instruments (Dolan, Wodak et al. 1995; Dolan, Hall et al. 1996; Heimer, Clair et al. 2002; Heimer, Clair et al. 2002), translated into Spanish appropriate for Puerto Rico, and back translated into English to assure accuracy. All interactions with inmates were conducted in Spanish. To protect anonymity, no personal identifiers were used and oral consent was obtained. Urine samples, obtained at the time of the interview, were tested for methadone and heroin using Enzyme Multiplied Immunoassay Technique™ (Dade-Behring, San Jose, CA). The presence of heroin was confirmed by gas chromatography.

Univariate analyses of interview data and urine test results, comparing patients and inmates not in the program, employed chi-square tests for categorical variables. A kappa coefficient was calculated to analyze the agreement between urine testing and self-report (Kelsey, Whittemore et al. 1996).

The research protocol used in this study was approved by the Yale University Human Investigation Committee.

## **RESULTS**

There were no significant differences between the patients and the 40 non-patients in terms of age and duration of their sentence (Table 1). At the time the interviews were conducted, 20 of 24 places in the Acuerdo de Superacion cellblock were occupied. Four cells were not occupied because of structural repairs. All 20 patients consented to participate. The 20 had been in the program between eleven months

(since its beginning) and twelve days. Mean and median times in treatment were 6.0 and 5.5 months, respectively.

Comparing self-reported drug use, we found that patients were more likely to have used heroin before and during incarceration (Table 1). In addition, patients had used heroin longer than the 23 non-patients who used heroin while in prison. Prior to incarceration, patients had used for a mean of 12.7 years and median of 13 years (range, 0-30 years) whereas the 23 non-patients has used for a mean of 7.0 years and a median of 4 years (range, 0-24 years). Patients also had been heavier users while in prison (Figure 1). All but two of the patients had used heroin on a daily basis prior to entry into treatment whereas only 6 of the 23 non-patients who used heroin in prison used daily. For these non-patients, the modal response regarding use in the prior 30 days was not once (n = 8).

Four of the sixty inmates interviewed reported using heroin for the first time while in prison; one was a patient. At the time of the interview, 15 of the inmates from the general population, but only three patients reported using heroin in the thirty days prior to their interview. However, two of the three patients had been in the program for less than thirty days and were excluded from direct comparison concerning drug use during the past 30 days. Thus, only 1 of 18 (5.6%) of the patients reported recent heroin use whereas 15 of 40 (37.5%) of the non-patient inmates did ( $p < 0.05$ ) and 65.2% of non-patient inmates who reported heroin use while in prison (n = 23) had done so recently ( $p < 0.0001$ ).

Urine testing found only one patient with evidence of recent heroin whereas nine of the 40 inmates from the general population tested positive. Of ten positive urine tests, six were from those reporting high-frequency heroin use (at least 4 times per week) and three were among those reporting no use in the past 30 days. Of the 50 negative tests, four were from those reporting high-frequency heroin use and 39 were

from those reporting no use. Given the different timeframes for self-report (30 days) and urine testing (2-5 days), there were 52 cases that could be evaluated to analyze concordance between self-report and urine testing. The eight we excluded were the individuals who reported infrequent recent heroin use (three times a week or less). The observed rate of agreement was 0.865 versus an expected rate of 0.701 based purely on chance, yielding a kappa coefficient of 0.549, significantly greater than would have been arrived at by chance ( $p < 0.001$ ).

There were no reports by either patients or non-patients of illicit consumption of methadone during incarceration. Urine testing for methadone found it only in all 20 of the patients and in none of the 40 non-patients.

Patient attitudes and beliefs about methadone as treatment for addiction were uniformly positive (Table 1). Eighteen of twenty responded that they were “satisfied” or “highly satisfied” with the program. Of the 40 non-patient inmates only those who reported heroin use while in prison were asked about their attitudes and beliefs. They were significantly less likely than patients to consider methadone maintenance effective and acceptable, and prior treatment was not associated with considering post-release treatment.

## **DISCUSSION**

Prior to this report, the effectiveness and acceptability of methadone maintenance among sentenced inmates had been shown only in studies from Australia. Darke et al. found that prisoners in a methadone maintenance program used heroin were less likely to use heroin and, among those who did, did so less frequently than patients in community-based methadone programs (Darke, Kaye et al. 1998). Of 100 prisoners, 38% had used heroin within the six months prior to interview; in contrast, 72% of community methadone patients had used heroin. The 38 prisoners used a median 4.5 days in the six-month period versus 20 days for patients in the community.

Darke et al. did not report if heroin use was associated with methadone dose or length of time in treatment. More recently, Dolan et al. ran a randomized clinical trial of methadone maintenance comparing those in methadone to those in a wait-list control group (Dolan, Shearer et al. 2003). Prevalence of heroin use, measured by self-report or hair testing, declined among those entering methadone treatment (n = 129) from 81% at baseline to 25% after four month. In the control group (n = 124), the decline was from 86% to 67%. No incident cases of syringe-borne viral infections were detected in either group.

Our evaluation of Acuerdo de Superacion revealed that (1) inmates selected for the program had been heavy heroin users even while incarcerated, suggesting that the program attracted an appropriate group of inmates; (2) once entered in the program, patients drastically reduced their use of heroin; (3) there was no evidence of methadone diversion; and (4) participation was associated with reporting an increased likelihood of accepting methadone treatment upon release from prison, suggesting that program benefits may extend beyond the period of incarceration.

There were several limitations to this study. First, Acuerdo de Superacion is only one year old, and has had only one inmate released from custody, so it is not yet possible to conduct a study that investigates recidivism and reincarceration. Second, the small size means that "estimates" of percentages or rates have huge confidence intervals. Third, selection bias may have reduced the likelihood that active drug users in the general inmate population would agree to a study that will be conducting urine testing. These latter two limitations would tend to reduce the ability to detect differences between the two groups. Nevertheless, we found significant differences.

The comparison of self-report and urine testing revealed that although the concordance between self-report and urine testing was only moderate, discordance was not due entirely to misrepresentations to disguise illicit drug use. There were three

people who denied use and tested positive, and four individuals who reported high-frequency heroin use and did not have positive urines. This suggests that social desirability did not unduly influence the results.

Although Acuerdo de Superacion is a small, pilot program, our evaluation suggests that prison-based methadone maintenance provides effective treatment for heroin addiction and promotes the acceptance of continued treatment upon release. Nevertheless, more than half of the randomly recruited inmates had used heroin while incarcerated and one quarter of these were daily users. The need for expansion of methadone maintenance is clear. These findings were recently released to the governmental authorities in Puerto Rico (Parés Arroyo 2003). As a result, Puerto Rico's Department of Corrections and Rehabilitation has expanded the program capacity from 24 to 50 patients and has begun to plan expansion to other prisons to treat 300 or more patients (Pacheco 2003).

## **ACKNOWLEDGEMENTS**

The authors would like to thank the Tides Foundation for its financial support and Dr. Salvador Santiago Negron, Gabriel Santiago, and the staff at Carlos Albizu University for their unstinting technical support.

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Table 1: Comparison of Acuerdo de Superacion (AS) Patients to Sample of Inmates from the General Population (Genl. Pop.)

	AS Patients	Genl. Pop.	
Age (average, range)	36.4, 21-50	32.8, 21-56	NS
Duration of Sentence (average, range)	19.9 years	22.1 years	NS
	4-64 years	4-174 years	
Heroin Use Prior to Prison	19/20 (95%)	25/40 (62.5%)	p < 0.01
Heroin Use While in Prison	20/20 (100%)	23/40 (57.5%)	p < 0.005
Intravenous Injection in Prison	19/20 (95%)	17/23 (73.9%)	NS
Heroin Use in Past 30 Days	1/18 (5.6%)	15/40 (37.5%)	p < 0.02
Heroin in Urine	1/18 (5.6%)	9/40 (22.5%)	NS
Illicit Methadone Use While in Prison	0/20 (0%)	0/40 (0%)	NS
Methadone in Urine	20/20 (100%)	0/40 (0%)	p < 0.0001
Methadone Is Effective Treatment	20/20 (100%)	33/40 (82.5%)	p < 0.05
Methadone Lowers HIV risk	20/20 (100%)	36/40 (90%)	NS
Recommend Methadone to Others	20/20 (100%)	37/40 (92.5%)	NS
Treatment for Addiction Before Prison	11/20 (55%)	7/23 (30.4%)	NS
Accept Methadone in prison	20/20 (100%)	17/23 (73.9%)	p < 0.02

**Figure 1. Self-reported Heroin Use**

The frequency of heroin use was compared based on self-report of the 20 Acuerdo de Superacion patients (solid bars) and the 23 non-patients who reported any use in the 30 days prior to the interview (open bars). Patients were asked to report on their heroin use in the 30 days prior to their entry into Acuerdo de Superacion.



