

Regular article

# The effect of methadone maintenance on positive outcomes for opiate injection drug users

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## Abstract

This study examined outcome variables for 160 opiate injection drug users (IDUs) who entered methadone maintenance between baseline and 6-month follow-up. Outcome variables of interest included drug use, productivity, and HIV risk behaviors. Participants were recruited through street outreach in Denver, CO, from 2000 through 2004 using targeted sampling. The sample was primarily men, White (48%), averaged 39 years of age, and had been injecting drugs for an average of nearly 20 years. Significant improvements were found in univariate tests. Logistic regression revealed that spending more time in treatment was a significant predictor of positive outcomes on drug use and HIV risk behaviors. The results underscore the importance of retaining IDUs in methadone maintenance to maximize their treatment success. Results from this study show that time in treatment can affect many aspects of the participant's life in a positive way, including reduction of HIV risk. © 2009 Elsevier Inc. All rights reserved.

*Keywords:* IDUs; Methadone; Treatment; Productivity; HIV risk

## 1. Introduction

Drug injection and injection of opiates (heroin) continue to be major problems in the United States. In 2006, according to the National Survey on Drug Use and Health, the number of current heroin users increased to 338,000, which is up from 136,000 in 2005, or a prevalence increase from 0.06% to 0.14% (SAMHSA, 2007a). In 2006, 91,000 persons with age more than 12 years reported using heroin for the first time, and the average age of first initiation for heroin use was about 21 years old (SAMHSA, 2007a). This indicates that heroin use is still a problem, and young people are starting use each day. Between 1995 and 2005, heroin treatment admissions increased nationwide by 12%. Of all reported treatment admissions in 2005, 21% were for opiate use, and 14% of that was for heroin, according to the Treatment Episode Data Set (SAMHSA, 2007b). The most common route of administration was injection (63%), and

daily heroin use was reported by 75% of admissions (SAMHSA, 2007b).

In addition to the ill health effects, social isolation, costs to society, and other disadvantages of drug use, injection drug users (IDUs) are also at risk for contracting HIV and hepatitis C (HCV) through risk behaviors such as needle sharing and unprotected sex, which often co-occur with injection drug use. Moreover, even today as we continue through the third decade of the HIV epidemic, injection drug use ranks as the second highest risk factor for contracting HIV, after homosexual contact among men (Centers for Disease Control and Prevention [CDC], 2007). Despite the success of prevention projects that raise awareness through outreach and intervention to drug users (Booth & Wiebel, 1992; Watters, 1996), some marginalized groups continue to engage in risky injection and sex practices. Recent reports indicate that among current cases of HIV, injection drug use has contributed to transmission in 25% of cases among men and 26% among women (CDC, 2007). Methadone maintenance therapy (MMT) has been successful in treating heroin dependence since its inception in 1965 (Ball & Ross, 1991; Dole & Nyswander, 1965; Dole, Nyswander, & Warner,

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1968; Glass, 1993; Ward, Hall, & Mattick, 1999), and more recent research has shown that MMT affects many aspects of the attendees' life, including drug use, productivity, criminality, and HIV risk behaviors (Millson et al., 2007; Sheerin, Green, Sellman, Adamson, & Deering, 2004; Simpson, Joe, & Rowan-Szal, 1997; Teesson et al., 2006). Methadone maintenance has been recommended by researchers and treatment providers as a modality that reduces needle sharing and other risk behaviors, in addition to promoting drug use cessation (Brickner et al., 1989; Gowing, Farrell, Bornemann, Sullivan, & Ali, 2006; Sorensen & Copeland, 2000). Although reduction of sex risk behaviors has been harder to achieve, some studies of treatment participants have noticed a reduction in sex risk behavior (Sorensen & Copeland, 2000). Although treatment programs do not always induce total abstinence from drug use, research has shown that contact with treatment such as MMT will likely lead the client to reduce their drug use (Booth, Crowley, & Zhang, 1996; Corsi, Kwiatkowski, & Booth, 2002; Kwiatkowski & Booth, 2001; Metzger, Navaline, & Woody, 1998; Sorensen & Copeland, 2000), as well as show improvements in other life areas, such as their health, employment status, personal relationships, and criminal behavior, among others (Ball, Corty, Bond, Myers, & Tommasello, 1981; Farrell et al., 1994; Kidorf, Brooner, King, & Stoller, 1998; Murray, 1998; Strain, Stitzer, & Bigelow, 1991; Teesson et al., 2006). By reducing drug use, drug users also reduce their risk of contracting blood-borne diseases, including HIV and hepatitis (Camacho, Bartholomew, Joe, & Simpson, 1997; Longshore, Hsieh, Danila, & Anglin, 1993; Metzger et al., 1998; Sorensen & Copeland, 2000).

In this study, we hypothesized that IDUs who entered treatment would show improvement on several outcomes, including drug use, productivity, criminal behavior, and HIV risk behavior. In addition, we were interested in discovering what factors might predict improvement on these outcomes for IDUs who entered MMT. The description of predictors of improved outcomes for treatment attendees is useful for substance abuse treatment providers and clinicians alike, as well as for researchers who seek effective strategies to improve health and life outcomes for drug users. These are important goals in light of the continuing dual problems of heroin use and HIV transmission.

## 2. Materials and methods

From 2000 through 2004, 160 out-of-treatment opiate IDUs were recruited through street outreach in Denver, CO, to participate in a study designed to facilitate entry into drug treatment and reduce injection-related HIV risk behaviors. Targeted sampling, using indicators such as drug-related arrests and drug treatment admissions among IDUs, were employed to estimate the number of drug users in each of the city's census tracts. Outreach workers recruited study participants and provided interventions. Eligibility criteria

were (a) self-reported opiate injection in the prior 30 days; (b) 18 years of age or older; (c) no self-reported substance abuse treatment during the previous 30 days; and (d) ability to provide informed consent. Eligibility was confirmed by urinalysis and inspection for evidence of recent venipuncture. Participants were compensated for their time as research subjects. Study procedures were approved by the Institutional Review Board of the University of Colorado School of Medicine and in accord with the Helsinki Declaration of 1975.

Trained interviewers administered the following instruments: the Risk Behavior Assessment (RBA) and the Anti-Social Personality Disorder measure from the Diagnostic Interview Schedule, Fourth Edition. The RBA was developed in the National Institute on Drug Abuse (NIDA) Cooperative Agreement Study as a measure to assess risk and behavior change in the follow-up version. Reliability and validity assessments of the RBA support its adequacy as a research tool for populations of drug users, including IDUs (Needle et al., 1995; Weatherby et al., 1994). Following the research interview, participants were offered free HIV, hepatitis B, and HCV testing and counseling. Then, they were randomly assigned to receive one of three interventions designed to facilitate an interest in treatment and reduce HIV-related risk behaviors. A 1-month period without any intervention was required prior to the 6-month follow-up interview.

### 2.1. Interventions

The three interventions that were offered to participants were risk reduction (RR), motivational interviewing (MI), and strengths-based case management (CM). RR and MI were the less intensive interventions of the three and were designed to facilitate more sweeping lifestyle changes (MI) or provided RR education sessions. The CM intervention was a community-oriented approach with an emphasis on client autonomy and skill development. Case managers met with clients to address the breadth of problems that clients had and focus on employing and increasing client strengths. Substance abuse treatment was addressed when the client was ready, typically after other basic needs, such as housing, were met.

### 2.2. Analysis

Interview data were entered, edited, and analyzed using SPSS and SAS. Outcomes representing five areas of concern were assessed at baseline and 6-month follow-up (within a 5- to 9-month window after baseline). These five areas were the following: (a) drug use, which included having a positive urinalysis (UA) for morphine and number of times injected heroin in the last 30 days; (b) productivity, including being employed and amount of legal income in the last 30 days; (c) criminal behavior, which included having any illegal income in the last 30 days; (d) needle risk behaviors in the last 30

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