Published in final edited form as:

J Addict Dis. 2015 ; 34(0): 151–161. doi:10.1080/10550887.2015.1059222.

Heroin use, HIV-risk, and criminal behavior in Baltimore: Findings from Clinical Research

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Abstract

This paper reviews research conducted in Baltimore over the past 15 years that examined accessibility and barriers to methadone treatment, compared those who enter treatment to those who do not, studied retention and counseling issues, as well as the impact of treatment on criminality, HIV risk among participants and overdose death in the community. Recommendations to develop policies are presented to reduce heroin use and its negative impact in the community.

Keywords

methadone maintenance; interim methadone; treatment retention; buprenorphine treatment; counseling

Introduction

Heroin addiction has been an endemic problem in the US for more than 50 years. While there have been periodic declines in incidence of heroin addiction over this period, it has been on the rise in the past several years.¹ Opioid agonist treatment with methadone or buprenorphine is effective in reducing illicit opioid use, HIV risk behavior, and crime.^{2–4} However, a major challenge to the field has been that the majority of adults with opioid addiction are not engaged in care, and adults who do enter opioid agonist treatment often discontinue it prematurely. Our research group has undertaken a series of National Institute on Drug Abuse-funded studies over the past 15 years to examine six questions of clinical and public health importance related to heroin addiction and its treatment in the community. First, what factors differentiate heroin-addicted individuals who enter methadone treatment from those who remain out-of-treatment? Second, how difficult is access to treatment for those who try to enter methadone treatment? Third, what are effective ways to increase access and to overcome the barriers to methadone treatment entry? Fourth, why do so many methadone patients drop out of treatment prematurely? Fifth, what are the added benefits of

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counseling when coupled with methadone or buprenorphine treatment. Finally, sixth, does increasing access to treatment have an impact on overdose mortality in the community?

This paper reviews our efforts to answer these questions and to formulate recommendations for local and state health departments concerned with addressing heroin use disorder in their communities.

1) What factors differentiate heroin-addicted individuals who enter methadone treatment from those who remain out-of-treatment?

Between November 1, 2004 and October 31, 2007, we conducted a longitudinal cohort study focused on entry and engagement in methadone maintenance treatment. During much of this time there were waiting lists for methadone, and buprenorphine was available only to those with private insurance or capacity to pay. The study enrolled 351 methadone patients newly admitted to one of six Baltimore City methadone treatment programs out of 13 such programs operating in the city at that time.⁵ The study also used targeted sampling to recruit 164 opioid-dependent adults from the streets who were out-of-treatment and not seeking care.⁶ Participants were interviewed at study entry and in four follow-up interviews conducted over 12 months using a standardized interview battery that included the Addiction Severity Index (ASI)⁶ and the AIDS Risk Assessment.^{7,8} A logistical regression analysis found a number of significant factors that distinguished between the in vs. out-of-treatment cohorts. These included the findings that out-of-treatment individuals more frequently used cocaine and more frequently committed crimes.

Interestingly, being on probation was associated with entering treatment. In Baltimore the State and Federal Probation and Parole offices widely referred those under their supervision to methadone, contrary to practices in many jurisdiction across the country.^{9,10} The out-of-treatment cohort also reported having significantly more sex partners and higher frequency of sex than the cohort entering treatment.¹¹ This research effort helped to characterize important differences between opioid-dependent individuals who were entering treatment and those who were not, and pointing to the need for targeted outreach strategies to maximize the public health benefits of treatment with methadone.

2) How difficult is access to treatment for those who try to enter methadone treatment?

Twenty six of the out-of-treatment participants in the longitudinal cohort study described above participated in semi-structured qualitative interviews examining reasons for not seeking treatment.¹² Despite one of the inclusion criteria being “not having received methadone treatment in the 12 months prior to study entry,” many out-of-treatment participants indicated that they had sought treatment for their addiction in the past. A number of participants mentioned the “waiting list,” the lack of a picture ID and lack of insurance or money to pay the clinic fees as barriers to treatment entry. Others indicated an unwillingness to give up the lifestyle associated with opioid dependence or preferring a time-limited rather than open-ended treatment as reasons for not entering. Negative beliefs about methadone including perceived lack of effectiveness, beliefs about methadone (e.g., it rots your bones), and aversion to the treatment structure at some of the methadone clinics kept others from seeking treatment. Finally, and importantly, some individuals feared cold

turkey methadone withdrawal due to incarceration,¹³ or rapid methadone dose taper associated with involuntary discharge from treatment due to ongoing drug use or non-adherence to program requirements. These findings presented a number of possible research and policy targets to seek to reduce patient perceived barriers to treatment entry.

3) What are effective ways to increase access and to overcome the barriers to methadone treatment entry?

Since the advent of methadone treatment in the US, there have been waiting lists in some cities for publicly-funded treatment.^{14,15} While the medication itself was inexpensive, federal and most state requirements stipulated that methadone treatment programs include some psychosocial services.¹⁶ This has generally taken the form of some minimum ratio of psychosocial staff to patients. In Baltimore, drug counselors were typical providers of psychosocial services. Thus, if programs were at capacity due to high counseling caseloads, to remain at required staff ratios they would typically decline to enroll new patients until existing patients dropped out of treatment. Combined with an increase in heroin addiction in Baltimore and other cities in the US and the level or reductions in government funding for publically supported treatment, the result was the proliferation of lengthy waiting lists in many methadone programs.

Prior to 1990, two randomized trials sought to examine whether providing methadone alone (without counseling) would be associated with better outcomes compared to the usual waiting list conditions. These studies, conducted in Chicago in the early 1970s¹⁷ and in New York City at the height of its AIDS epidemic¹⁸ found that patients receiving methadone alone had greater reductions in heroin use and higher rates of entry into standard methadone treatment with counseling compared to those who remained on the waiting list.

Following the study by Yancovitz and coworkers, the US Federal regulations governing methadone treatment were revised to permit “interim” methadone treatment under certain conditions for individuals on methadone program waiting lists.¹⁹ Interim methadone included a number of requirements, including daily directly observed methadone administration (i.e., no take home doses), a maximum of 120 days on interim treatment prior to transfer to standard care, and a restriction of interim treatment to not-for profit programs. Despite the existence of these regulations permitting interim methadone since 1993, interim methadone was rarely if ever used until we began recruitment of study participants in 2002 for a randomized trial comparing interim methadone to a waiting list condition in Baltimore.

In our initial study of interim methadone treatment (described in detail in Schwartz et al., 2006),²⁰ 319 opioid-dependent adults were recruited from a methadone treatment program waiting list. These individuals were randomly assigned to receive interim methadone for up to 120 days, at which time they were transferred to standard methadone treatment, or remained on the usual waiting list. Participants in the interim group compared to those on the waiting list were found, over the course of two follow-up interviews at 4- and 10-months post-study entry, to have an increased likelihood of entering and remaining in standard methadone treatment and of reducing: opioid use²⁰; HIV risk behavior²¹; criminal behavior²⁰; and, arrest.²² This randomized trial suggested that interim methadone was an

effective approach that suggested greater public health benefits and reductions in criminal activity when waiting lists were a significant barrier to treatment entry

Could Interim Methadone Treatment Be Scaled-up?—The waiting lists for methadone treatment in Baltimore persisted through 2005 despite the beginning of the availability of subsidized buprenorphine treatment, which had been approved by the FDA in the fall, 2002. Given the findings of the interim methadone trial, we wished to test whether interim methadone treatment could be scaled up at multiple clinics to treat large numbers of patients. Through Substance Abuse and Mental Health Services Administration (SAMHSA) funding to Baltimore's substance abuse treatment authority, 1,000 out-of-treatment heroin-addicted adults from program waiting lists at six methadone treatment programs were enrolled in interim methadone.²³ Half of the patients had a \$10 weekly co-payment and the other half had free interim treatment. An evaluation of this effort found that 76% of the interim patients successfully transitioned to standard methadone treatment, and the rate of opioid-positive drug tests dropped sharply between admission to interim and transfer to standard treatment. There were no significant differences in the rates of treatment entry based on whether or not the participants had a co-payment. This demonstration project showed that interim methadone could be scaled up across a city, that benefits previously observed (e.g., reduce heroin use) were replicable, and that patient fees could support its delivery.

(4) Why do so many methadone patients drop out of treatment prematurely?

Despite the fact that methadone maintenance is considered a long term treatment and much evidence indicates that retention in treatment is associated with superior patient outcomes,^{24–28} many published studies have found that many newly-admitted patients are no longer in treatment within the first year after admission.^{29–31} Our research team conducted qualitative interviews with 42 participants who were discharged prior to their first anniversary of treatment entry.³² These interviews revealed that the two major categories of explanation for premature cessation of treatment were incarceration when methadone was not continued in jail (and therefore patients were discharged from treatment) and reasons that could be attributed to patients' interaction with the treatment program personnel and structure. The former problem has been substantially resolved in Baltimore City since this study, because the City's Detention Center (which is operated by the Maryland Department of Public Safety and Correctional Services) started maintaining arrestees on their community methadone dose. This permitted patients to benefit from continuity of care between their arrest and seamless return to their community methadone program. However, to our knowledge relatively few jails in the US (including those in New York City and in Albuquerque, NM) are providing continued treatment to arrestees. This is clearly a cause for treatment drop out that could be resolved.

Aside from incarceration, patients who were discharged reported that they were expelled from the program due to a variety of factors. Such factors included: disagreement with program rules (such as take-home policies interfering with work and policies prohibiting children from accompanying their caregivers to the program), conflict with counseling staff, inability to switch counselors if a conflict could not be resolved, discharge for non-payment

of fees, or for submitting a tampered urine sample. Given the relationship between treatment retention and positive patient outcomes, these findings provide a potential blueprint for improving patient retention in methadone programs. Retention in treatment is also an important way to improve the efficiency of methadone programs because frequent and early discharge represents a poor use of staff resources, as new admissions and patients early in the treatment process tend to require more labor-intensive attention. An ongoing randomized trial in two Baltimore MTPs is seeking to address these issues by comparing a novel patient-centered methadone treatment approach to standard methadone treatment (National Clinical Trials Number 01442493). In the patient-centered approach, the roles of the counselor and the rules of the clinics were modified. The counselors are not charged with enforcing the rules of the clinic in order to increase the likelihood of forming a therapeutic alliance. The rules are enforced by the counselors' supervisors. The rules of the clinic are modified so that patients can attend counseling as much or as little as they wish and discharge against the patients' will is a rare event.

The line of research pursued in the above-mentioned study of entry and engagement in methadone treatment intersected with our first study of interim methadone treatment. One possible concern about interim methadone treatment is that the absence of routine counseling would result in high attrition rates. In our first study of interim treatment vs. waiting list, there were no discernable baseline characteristics that distinguished participants who would drop-out of interim methadone treatment from those who did not.³³ These included factors that had been previously shown to impact treatment retention in standard methadone programs such as demographics, cocaine use, criminal justice history, and motivation.^{34–36} Thus, it appears that even those adults with increased drug use severity and at higher HIV risk (e.g., drug injection and cocaine use) fare well in interim methadone treatment. These findings have important implications for the use of interim methadone as a general public health approach to the treatment of opioid use disorder.

5) What are the added benefits of counseling when coupled with methadone or buprenorphine treatment?

Although methadone alone was shown to be superior to waiting list, questions remained whether patients receiving interim methadone would somehow be disadvantaged compared to individuals entering standard methadone treatment directly because the latter would have access to counseling services immediately upon admission. To address this question, we conducted a randomized trial among 230 newly-admitted methadone patients at two treatment programs in Baltimore.³⁷ Participants were randomly assigned to receive: (1) interim methadone for four months followed by 8 months of standard methadone; (2) standard methadone treatment for 12 months; or (3) standard methadone for 12 months with a counselor with a 50% caseload to permit extra attention for this group of participants. No significant differences between study conditions were found during follow-up assessments conducted at 4 and 12 months post-study entry in terms of treatment retention, any ASI composite score, self-reported heroin or cocaine use, or urine-positive opioid or cocaine tests. While the entire sample of participants reduced their frequency of drug injection, of sharing cookers, cottons, and rinse water, and of injecting with other individuals who injected drugs, there were no significant differences between conditions in HIV drug or sex

risk behaviors over the 4- and 12-month follow-up interviews.³⁸ Thus, it appeared that providing methadone alone during the initial phases of treatment was as effective as standard care. Interim methadone treatment without counseling did not disadvantage patients over the longer term.

In an economic analysis of this study, we found that the cost of adding a limited number of interim methadone patients at the margin to an already operating methadone treatment program was substantially lower than adding standard methadone patients.³⁹ We did not find any significant differences in outcomes at the one year follow-up between those who started in interim methadone and those who started in standard methadone treatment.⁴⁰ The costs of an average treatment episode that began with interim methadone was about 60% of that of standard treatment, but given the variability in cost due to varied lengths of stay, this difference was not significant. We counted as benefits reductions in emergency room and hospitalizations, increased earnings, decreased arrests, and reduction in days of incarceration compared to the pre-admission year. For interim methadone and standard methadone groups combined the major contributor to benefits was a reduction in days of incarceration, followed by a modest increase in self-reported legal earnings. We found no decreases in costs associated with the use of hospital emergency rooms or overnight stays in the hospital. The overall cost/benefit ratio of 1.5 (not statistically significant but largely consistent with other recent analyses) was probably an underestimate since our conservative analysis did not try to estimate avoided victim costs, reductions in money spent on drugs, or potential savings from avoided drug-related problems such as HIV and hepatitis. We noted in this paper that it is only in the area of treating substance-using adults that the value of treatment is judged primarily by the savings to non-treatment populations, rather than the benefits to those treated.

Medical Maintenance—On the other end of the spectrum from new admissions, exist a group of patients in US programs who have been doing extremely well in treatment for many years and use minimal services beyond the receipt of methadone and relapse monitoring by the program. For this group of patients, so-called medical maintenance was developed in New York City.^{41–43} This approach refers to monthly physician visits, which include clinical monitoring, urine testing, and dispensing of monthly methadone doses. Switching appropriate patients from standard methadone treatment to medical maintenance could potentially free up treatment slots that could be used for an out-of-treatment individual on a waiting list. It could also avoid potentially unsuccessful attempts to discontinue methadone by individuals who no longer wish to attend the treatment program but who would remain on the medication if it were available without the trappings of the traditional methadone treatment program. A series of reports from New York City's medical maintenance program have indicated high retention rates, low relapse rates, and high patient satisfaction with the program.^{41–44}

In Baltimore, we evaluated a medical maintenance program in which 21 stable methadone patients were followed in a physician's office for 12 years.⁴⁵ The physician saw the patients during monthly visits when urine specimens were collected and 30 doses of methadone were provided. Participants in the program had on average nearly a decade (range 5 to 18 years) of sustained abstinence prior to entering medical maintenance. Over 70% of the patients

remained in treatment the entire 12 years and less than 1% of the urine samples tested were positive for illicit drugs. There were no reported cases of methadone overdose or of medication diversion. This service proved safe and effective. Medical maintenance has since been federally-approved and is available for use within the methadone treatment program setting.⁴⁶

5) What are the added benefits of additional counseling beyond the standard level provided in outpatient programs using buprenorphine?

Baltimore's adopted buprenorphine treatment across a number of formerly drug-free outpatient programs in Baltimore. This approach attracted a patient population heroin-dependent individuals that was more likely to be female and to have medical and psychiatric problems and less likely to inject drugs than those patients entering methadone treatment over roughly the same time period.⁴⁷ Given that programs were adopting buprenorphine that had previously used counseling without medication, an important question that arose from this service model was whether the level of counseling services made a difference for patient outcomes. We conducted a randomized trial of intensive outpatient (IOP) vs. standard outpatient (OP) counseling among 300 African American patients receiving buprenorphine treatment in formerly drug-free outpatient programs.⁴⁸ Participants in IOP received a mean of 5.2 hours of the planned 9 hours per week of counseling while those in standard treatment that required a minimum of two hours per week received 3.7 hours per week. There were no significant differences between study conditions across 3 and 6 month follow up interviews in terms of treatment retention, self-reported or drug testing confirmed opioid or cocaine use, meeting DSM-IV criteria for opioid or cocaine dependence, criminal or HIV risk behavior, or quality of life. It was not clear whether certain types of patients would have benefited from more intensive treatment or when it might best have been provided.

6) Does increasing access to treatment have an impact on overdose mortality in the community?

Using archival data, we examined the association between the expansion of opioid agonist treatment and the number of heroin overdose deaths in Baltimore from 1995 through 2009⁴⁹. From 1995 to 2000, the purity of seized heroin in Baltimore was rising and no association was found between the number of patients in methadone treatment and the number of heroin overdose deaths. However from 2000 to 2009, controlling for heroin purity, the increasing number of patients in opioid agonist treatment was associated with the sharply decreasing number of heroin overdose deaths.

Discussion

Many cities in the US have endemic heroin problems and have faced challenges to increase the number of heroin-addicted individuals in evidence-based treatments.^{14,15,18,20} The rationale for increasing the number of individuals in treatment in a locality is that when a critical percentage of individuals are in treatment, the greatest public health benefits can be realized.⁵⁰ This may have been the case when a sharp decline in hepatitis, crime and overdose deaths occurred during the rapid expansion of methadone treatment in New York City in the 1970s,⁵¹ when an expansion of methadone and buprenorphine treatment in

Baltimore was associated with a decrease in heroin overdose deaths⁴⁹ and an expansion of buprenorphine treatment in France was associated with a deaths.⁵² Thus, finding approaches to increase access to and retention in effective treatment could be beneficial not just for individual patients, but for the community at large.

The major findings from our community-based research over the past 15 years may have implications for other cities with endemic heroin problems. First, there are several steps that could be taken to lower barriers to methadone treatment entry which would in turn increase the number of patients enrolled in care. Clearly, the lack of insurance and inadequate public funding for methadone treatment made access to care beyond the reach of some heroin-addicted individuals and contributed to development of waiting lists for treatment entry. Where for-profit programs exist there may be no waiting list for treatment but relatively few heroin addicted individuals can afford the weekly fee that these programs charge. These funding problems can be reduced when states choose to expand Medicaid access under the Affordable Care Act and make substance abuse treatment a covered benefit under the Medicaid. States that chose not to expand Medicaid could provide alternative funding sources for treatment with their own tax payer dollars.

Low cost and effective approaches, such as interim methadone, could be adopted in geographical areas in which there are still waiting lists for treatment and limited possibilities for expanding public support. This approach has been shown in randomized trials to be more effective in reducing heroin use than allowing patients to continue to use illicit drugs while awaiting treatment entry.^{17,18,20} In addition, HIV risk, and arrest appear to be reduced.²¹⁻²² Interim methadone can be scaled up relatively quickly to treat large numbers of patients in numerous programs and at a low cost (estimated at a few dollars per week/patient added to an existing program) that could be subsidized by low payments from the patients themselves.²³ Extant data from three clinical trials with methadone^{37,53,54} indicate that early in treatment, patients receiving methadone alone fare as well as those who receive methadone with counseling. These studies were not designed, and do not prove that counseling is without value, they only indicate that in many publically supported programs, the quality and quantity of psychosocial support was not such as to yield a measurable difference in outcome. A study with a smaller sample conducted at a relatively well-staffed Veterans Administration facility seemed to show that psychosocial services did produce better outcomes than methadone alone.⁵⁵

Out-of-treatment opioid-dependent adults compared to those entering methadone treatment used cocaine more frequently and had higher HIV risk. This finding underscores the potential public health risks borne by these individuals and the need for increased treatment recruitment efforts. Increasing linkages to care in places where such individuals might be found, such as needle exchanges or jails, might be a worthwhile approach. Fortunately, Baltimore^{56,57,58} and other cities⁵⁹ have shown that adults who inject heroin can be effectively recruited for treatment through needle exchange programs. Recruitment through Probation and Parole Offices, as was successfully accomplished as far back as 1970 in New York City, would be an effective approach for increasing treatment access.⁶⁰ Jails would be a logical site to recruit out-of-treatment heroin dependent individuals for treatment, but with the exception of Rikers Island Jail in New York City,⁶¹ there are very few jails that will

initiate opioid agonist treatment. Our group is launching a study to examine the potential benefits of initiating methadone treatment in jail for out-of-treatment detainees dependent on heroin.

Entering into methadone treatment itself is not sufficient to achieve positive outcomes because premature discharge is quite common and can result in overdose death and other problems associated with drug use.⁶² Our findings that premature discharges are often related to incarceration or issues under the control of the programs opens two possible avenues to improve treatment retention and patient outcomes. The first would be for local jails to continue methadone for arrestees during their detention and discontinue it only if they receive prison sentences. The second would be for programs and those entities that are responsible for care at these programs to examine their policies and practices regarding involuntary discharge from treatment. In many treatment programs, counselors have two contrasting roles: the enforcer of clinic rules and the counselor who seeks to form a therapeutic alliance. In other programs, the treatment philosophy is that individuals who are not responding quickly enough to treatment and who continue to use illicit drugs may have a negative impact on the clinic as a whole and should be discharged. We are currently conducting a randomized trial comparing patient-centered methadone treatment to standard methadone treatment to determine if modifying the rules and structure of the clinic might lead to better treatment retention and outcomes.

Finally, routinely adding intensive, and hence more costly, levels of counseling to opioid agonist treatment does not appear to be supported by the preponderance of the available data. Our study with buprenorphine⁴⁸, and other studies with buprenorphine^{63,64} and research with methadone treatment⁶⁵ indicate that providing additional counseling to these treatments is not more effective than lower levels of counseling. It would seem wise to have higher levels of care reserved for those patients who do not respond to usual care. In doing so, resources could be made available to provide effective and lower cost treatments to a larger number of individuals.

Acknowledgments

Source of funding: This work was supported through National Institute on Drug Abuse (NIDA) Grant Nos. 2R01DA15842 and 2U01DA13636.

NIDA or the National Institutes of Health had no role in the preparation, review, or approval of this manuscript.

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