

Forum

Methadone Maintenance Treatment in the Criminal Justice System

Stewart B. Leavitt, MA, PhD; Editor, *Addiction Treatment Forum*

The merits and effectiveness of addiction treatment in the criminal justice system and methadone maintenance treatment (MMT) for opioid addiction, in particular, have not been universally understood and accepted. However, criminal justice populations are in critical need of treatment for opioid addiction and most still do not have access to it (CSAT 2005a).

Just as juries need evidence from reliable witnesses or forensic investigations to arrive at fair-minded verdicts, those working within the criminal justice system require valid evidence when evaluating the worthiness of treatments for drug addiction (Hora 2004). Therefore, this paper focuses on well-established evidence and credible commentary to provide a current and balanced perspective on MMT within court, jail, and prison settings.



Challenges, Consequences, & Opportunities

Opioid Abuse & Addiction Are Common Medical Problems in Offenders

Interactions with the criminal justice system are common experiences in the personal histories of drug addicts. Arrests for drug abuse violations have steadily increased through the years — in 2003 alone, there were 1.7 million arrests for drug law violations, making it the most numerous type of crime in America (CSAT 2005b). More than a quarter of all drug arrests each year involve serious risks of acute, distressful opioid withdrawal in detainees (Fiscella et al. 2005).

Among jail and prison populations today, 80% have substance abuse problems, 20% have histories of heroin abuse, and as many as 30% of all inmates are injection-drug users (Rich et al. 2005b). Increasingly, the illicit use of and addiction to prescription opioid medications is implicated in criminal activities, arrests, and incarceration.

While addiction treatment has sometimes been viewed as a form of social welfare, of questionable effectiveness, it actually extends beyond benefitting individual addicted offenders to serve the best interests of society (ONDCP 1999). However, during court supervision or incarceration, addiction must be treated as a *medical problem* through valid interventions targeted to the specific drug(s) of abuse (Maremmani et al. 2004).

Criminal justice populations are in critical need of opioid-addiction treatment, yet most do not have access to it.

Opinions vary regarding the use of medications for treating drug addiction among offenders (CSAT 2005b). Some hold a belief that ‘drugs’ of any sort should not be tolerated in the criminal justice system and it is important to learn how to live drug free (ONDCP 1999). However, while it is recognized that some of the therapeutic drugs are themselves dependency-producing, extensive evidence (discussed below) clearly demonstrates the validity of medication-assisted treatment approaches for addiction.

Heroin Continues To Take A Toll

Nearly one million Americans are estimated to be heroin-addicted, although this number is probably undercounted (ONDCP 1999; Parrino and McNicholas 2002). Reports from drug enforcement agencies indicate that high-purity heroin continues to be low in cost; a heroin “fix” can be purchased for as little as \$5 and its purity exceeds 70% in some major cities (DoJ 2004; Nadelman and McNeely 1996). This has attracted many new users, and their experimentation with smoking or snorting the drug eventually leads to injection. A typical intravenous-heroin abuser may inject 4 or more times each day and this has been associated with high rates of communicable diseases — including HIV/AIDS, hepatitis, and tuberculosis — medical emergencies, and deaths from overdose (CSAT 2004; Kauffman and Woody 1995; NIDA 1997, 1999a; NIH 1997; NSDUH 2003; ONDCP 1999; Payte et al. 2003).



Opioid Analgesics A Growing Concern

One of the most troubling and increasing problems facing American communities is the abuse of opioid analgesics (pain relievers), which has been associated with addiction and drug overdoses. The prevalence of prescription-opioid abuse has surpassed illicit-drug abuse (CSAT 2004; Zacny et al. 2003). For example, in 2002 an estimated 4.4 million persons took prescription pain relievers for non-medical purposes, compared with 3.9 million individuals who abused substances such as heroin or cocaine (NSDUH 2003). The potential for prescribed opioid analgesics to be involved in addiction and criminal activities cannot be overlooked, and there have been sharp increases in hospital emergency department visits along with an upsurge in widely publicized overdose deaths attributed to those drugs — such as, oxycodone, hydrocodone, morphine, methadone, and others (CSAT 2004; SAMHSA 2002; Zacny et al. 2003). It should be noted that the methadone in most of those cases was prescribed by physicians for analgesia, rather than by methadone-maintenance programs for the treatment of addiction (CSAT 2004).

Applying Science to Opioid Addiction Treatment

Addiction – A Brain Disease

Based on the preponderance of evidence, medical experts have accepted drug addiction as a chronic, progressive, relapsing *disease* of the brain, which is influenced by genetic, neurobiological, psychosocial, and environmental factors. Outwardly, addiction is characterized by impaired control over continued drug use, compulsive use despite harmful consequences, and/or intolerable drug craving (Nestler and Malenka 2004; WHO 2004). These effects reflect actual *changes in brain chemistry and function*.

Addiction to opioid drugs is particularly insidious because the brain produces its own opioid substances (for example, endorphins) that are vital for survival. In effect, the brain is “tricked” by external, short-acting opioid agents into responding *as if* they

Drug addiction is a chronic, progressive, relapsing disease of the brain involving harmful changes in chemical balance and function.

are biologically essential. Once addiction sets in, brain chemistry becomes unbalanced, and the person is physically, emotionally, and mentally dysfunctional unless more opioid drug is regularly taken. These derangements are severe and enduring, lasting months or years after the last drug-taking episode. So, even if opioid-abstinence is achieved, relapses are common without ongoing therapy of some sort (Nestler and Malenka 2004; WHO 2004).

Recent advances in imaging technology have dramatically depicted how the addicted human brain is functionally abnormal. For example, SPECT (Single-Photon Emission Computed Tomography) images show altered blood circulation in the cerebrums of opioid addicts, denoting deficient mental functioning (see Swiss cheese appearance in the heroin **Image**; Amen 2001). This part of the brain is involved in judgement and impulse control; hence, the addicted brain is both physiologically and psychologically impaired, which influences the misbehavior so often associated with drug addiction, including criminal activity.

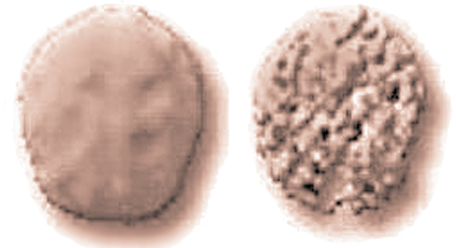
In this context, opioid “detoxification” — merely restoring the brain to its pre-addiction level of drug tolerance — is an ineffective therapy; psychological disturbances and opioid craving ingrained by addiction remain for an indefinite period of time making drug lapses and/or relapse largely inevitable (Maremmani et al. 2004). Opioid abstinence and drug-free therapies may be only partial measures, possibly ameliorating further brain damage, but they do not stabilize the chemical imbalances wrought by opioid addiction to permit more normal brain function.

The Rationale Of Methadone For Treating Opioid Addiction

During the more than 65 years since its development, methadone has become the most extensively studied medication worldwide, and the accumulated scientific evidence demonstrating its effectiveness and safety in treating opioid dependence is beyond doubt (CSAT 2005a; Parrino and McNichols 2002). In 1997, an independent panel of distinguished experts convened by the National Institutes of Health to reach a consensus on effective treatments for opioid addiction concluded, “Of the various treatments available [for opioid addiction], methadone maintenance treatment [MMT], combined with attention to medical, psychiatric, and socioeconomic issues, as well as drug counseling, has the highest probability of being effective” (NIH 1997).

Methadone was developed in the late 1930s and approved by the U.S. Food and Drug Administration (FDA) in 1947 as a painkiller. By 1950 oral methadone also was used to treat the painful symptoms of persons withdrawing from opioids, usually heroin (Joseph et al. 2000; Payte 1991; Rettig and Yarmalonsky 1995). In 1964, researchers at Rockefeller University, New York City, discovered that an ongoing, daily dose of long-acting oral methadone – maintenance treatment – offered a number of beneficial effects allowing otherwise debilitated opioid addicts to function more normally (see **Box**; CSAT 2005a; Dole 1988; Kreek 1993; NIH 1997; Payte et al. 2003; Stine et al. 2003).

From the outset, methadone maintenance has been portrayed as *corrective therapy*, rather than as a “cure” for opioid addiction (Dole 1988) — akin to insulin as remedial therapy for diabetes. And, methadone is only one component of a more comprehensive



Normal

Heroin

SPECT images looking down at tops of brains, depicting harmful effects of heroin.

Benefits of MMT

- An adequate maintenance dose of methadone does not make the patient feel “high” or drowsy, so the person can generally carry on a normal life. Drug-seeking to “feed a habit” ceases.
- Methadone can be taken once daily by mouth without the use of injection needles, which limits exposure to diseases like hepatitis and HIV.
- Methadone’s gradual, long-lasting effects eliminate drug hunger or craving.
- There is little change in tolerance to methadone over time, so it does not take more of the drug to achieve the same results.
- Euphoria-blocking effects of methadone make taking illicit opioids undesirable.
- Used properly, methadone is generally safe and nontoxic, with minimal side effects.

Methadone's unique properties normalize aberrant brain chemistry and allow the person to live a much more stable existence.

program of addiction recovery. Yet, despite the accumulated scientific knowledge, methadone is sometimes falsely regarded merely as a substitute for heroin or other illicit opioids, trading one addiction for another (CSAT 2005a; NIH 1997; Maremanni et al. 2004).

Although it is true that methadone produces physiologic dependence, as do all opioids, it has unique pharmacologic properties that normalize aberrant brain chemistry and allow the person to live a life unencumbered by the cravings and loss of control characterizing addiction (CSAT 2005a). Methadone's steady and long-term action in the brain contrasts sharply with the disruptive cycle of "highs" and "lows" produced by short-acting opioids that lead to addictive behaviors (Kreek 1993; Nadelman and McNeely 1996; Payte et al. 2003).

Oral methadone has demonstrated a favorable safety profile, with no serious adverse reactions or organ damage specifically associated with its continued use extending more than 20 years in some patients (Payte et al. 2003; Stine et al. 2003). Furthermore, at appropriate dose levels methadone does not hinder a patient's intellectual capacities or physical abilities (Gordon 1994). If anything, methadone maintenance substitutes a *stable existence* for one of compulsive drug seeking and taking, criminal behavior, chronic unemployment, and high-risk sexual and drug-use behaviors (ONDCP 1999).

Adequate methadone dosing is critical for therapeutic success.

Adequate methadone dosing is critical for therapeutic success. Dozens of studies have demonstrated that dosing in the range of 80 to 120 milligrams of methadone per day, on average, results in desirable outcomes, such as better retention of patients in treatment and less illicit drug use (Nadelman and McNeely 1996; Payte and Khuri 1993; Stine et al. 2003). For a variety of reasons — such as, high tolerance to opioids, physical condition, mental status, concurrent medications, or prior use of high-purity heroin — many patients require much higher daily methadone doses for treatment success; sometimes exceeding 200 mg/day or more (CSAT 2005a; Leavitt 2003; Payte et al. 2003; Stine et al. 2003).

Ongoing MMT Is Essential & Cost Effective

Time in treatment is a critical factor for addiction recovery. Ongoing methadone may be required for a lifetime to maintain neurochemical balance, much like insulin is required to modulate blood sugar levels in a person whose body cannot do that for itself. Virtually all who abandon MMT and do not pursue further treatment eventually relapse (Rosenblum et al. 1991) and potentially overdose (CSAT 2004).

Patients treated for fewer than 3 months in MMT generally show little or no improvement (NIH 1997; Payte and Khuri 1993); whereas, reductions in illicit opioid use of up to 80% or more after several months have been demonstrated, with the greatest reductions for patients who remain in treatment more than a year (Federal Register 2001; CSAT 2005a,b).

An often-quoted study – the *California Drug and Alcohol Treatment Assessment (CALDATA)* – found that for every \$1 spent on addiction treatment more than \$7 in future costs were saved. MMT was determined to be the lowest-cost, most effective treatment modality for opioid addiction; whereas, programs offering only opioid detoxification showed no long-term benefits at all (CSAT 2005a; Kauffman and Woody 1995).

Others have noted a \$4 cost savings for every \$1 spent specifically on MMT (Parrino and McNicholas 2002). However, the latest evidence-based research — taking into

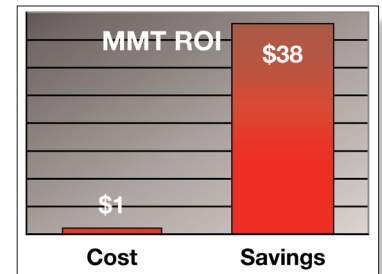
Methadone may be required for a lifetime to maintain chemical balance in the brain and prevent relapse to opioid abuse.

account the lifetime impact of criminal activity and potential incarceration, unemployment, health care utilization, and the possible need for multiple treatment episodes — found an economic benefit-to-cost ratio for methadone maintenance of nearly \$38 for every \$1 spent on this treatment (see **Graph**); more than a 9-fold greater return on investment in treatment than previously projected (Zarkin et al. 2005).

Expanding Treatment Options: Buprenorphine

In 2002, another opioid-class medication, buprenorphine, was approved by the government for prescription by qualified physicians to treat opioid addiction (SAMHSA 2004a; Stine et al. 2003). While multiple treatment options are desirable, well-designed clinical trials have repeatedly demonstrated that, at best, buprenorphine is equivalent to methadone for *some* individuals; although, in many cases buprenorphine has been inferior to methadone in terms of fostering retention in treatment, illicit-opioid abstinence, and reductions in risky behaviors (Barnett et al. 2001; Kristensen et al. 2005; Ling et al. 1996).

Buprenorphine has been recognized as “unlikely to be as effective as more optimal-dose methadone, and therefore may not be the treatment of choice for patients with higher levels of physical dependence [on opioids]” (Krantz and Mehler 2004; SAMHSA 2004a). To date, there is very little experience with buprenorphine in the criminal justice system, and without the close monitoring, psychosocial therapy, and other support services typically provided by a comprehensive MMT program, the long-term benefits of buprenorphine therapy must be considered cautiously in many opioid-addicted persons.



MMT provides a very large return on investment.

The Role of MMT in the Criminal Justice System

The Drug Treatment Court (DTC) Movement

The National Institute on Drug Abuse asserted, “Research has shown that combining criminal justice sanctions with drug treatment can be effective in decreasing drug use and related crime. Individuals under legal coercion tend to stay in treatment for a longer period of time and do as well as or better than others not under legal pressure” (NIDA 1999b). Such treatment may be effectively delivered prior to, during, after, or in lieu of incarceration.

In response to courts overburdened with drug-arrest cases, and accepting that coerced treatment for addictive disorders could be effective, the Drug Treatment Court (DTC) movement was founded in 1989 (CSAT 1993; Hora 2004). Today, there are more than 1,600 drug courts in the U.S., with 70,000 program participants and 16,000 annual ‘graduates’ – persons successfully completing their court-supervised programs (Huddleston et al. 2005).

Drug court participants undergo intensive substance abuse and mental health treatment, case management, drug testing, and probation supervision while reporting for regularly scheduled status hearings before judges familiar with the DTC model (CSAT 2005b; Huddleston et al. 2005). These courts have demonstrated that they “outperform virtually all other strategies that have been attempted for drug-involved offenders...” (Marlowe et al. 2003), and at very favorable benefit-to-cost ratios (Finigan 1999).

For offenders who qualify, methadone treatment is a cost effective alternative to incarceration (Federal Register 2001; Kreek 1993; ONDCP 1999). Studies have estimated that it costs about \$40,000 per year if an offender is incarcerated and only about \$3,500 for



Recognizing that coerced treatment can be effective, the DTC model has outperformed other strategies for dealing with drug-involved offenders.

MMT (Krantz and Mehler 2004). Further evidence found that up to 80% of MMT program participants eliminate or significantly reduce illegal activity and their full time employment increases by 24% (ONDCP 1999; Parrino and McNicholas 2002).

DTCs are facing increasing numbers of opioid-dependent offenders (Parrino and McNicholas 2002), and it has been suggested that outcomes can be improved by mandating ongoing program participation following completion of the primary, court-ordered treatment episode (Christoff 2005). Therefore, services delivered by community MMT programs are an ideal solution for meeting the needs of opioid addicts in recovery.

Unfortunately, some courts have historically viewed MMT programs with skepticism and have not welcomed their participation. There have been cases of judges, without prior medical consultation, ordering defendants to stop or taper their use of prescribed methadone as a condition of admission to or graduation from DTC programs. The outcomes in these offenders were predictably unfavorable (Hora 2004).

Methadone in Jails/Prisons

When the law leaves no alternative but detention, it still may create an opportunity to administer treatment for opioid addiction. A U.S. Department of Justice survey of inmates in local jails in 2002 found that 1 in 5 had used heroin or other illicit opioids in the past, 12% on a weekly basis, and 4% were using the drugs at the time of their offense (Karberg and James 2005).

The World Health Organization (WHO 2004) has asserted that, "Prisoners on methadone maintenance prior to imprisonment should be able to continue this treatment while in prison." Furthermore, during incarceration and following release from jail or prison are ideal times to connect opioid-addicted inmates with MMT programs. As many as 70% of *untreated* parolees with histories of heroin abuse are reported to return to drug abuse within 3 months of their release, and are up to 6 times more likely to become infected with HIV (Rich et al 2005b). Conversely, opioid-addicts receiving treatment while incarcerated have demonstrated improvements in terms of frequency of re-imprisonment, number of detention periods, and the total time served while attending MMT (Maremmani et al. 2004).

However, as with the courts, many jail and prison authorities have been slow to adopt MMT as a therapy of choice for opioid addiction. One survey of state and federal prison medical directors found that 48% use methadone, however, this was almost exclusively on a short-term basis for pregnant inmates. Methadone maintenance was rarely implemented and only 8% of respondents referred opioid-dependent inmates to community MMT programs upon release (Rich et al. 2005a).

A national survey specifically of jail administrators found that very few used methadone (1%) or other opioid agents (2%) to assist in opioid withdrawal, and 85% did not continue methadone for inmates who were previously participants in community MMT programs. Three-quarters of jails did not even contact the MMT programs about inmates under their care to learn of their prior methadone dose level (Fiscella 2005; Fiscella et al. 2005).

Perhaps, the greatest advantage of MMT for opioid-addicted detainees is that jails and prisons can become useful therapeutic settings for starting offenders on treatments that will help assure ongoing recovery upon their future return to freedom. The

During incarceration or immediately following release from jail or prison are ideal times to connect opioid-addicted inmates with MMT.

An advantage of MMT for opioid-addicted detainees is that jails and prisons can become therapeutic settings, starting offenders on treatment that will help assure ongoing recovery when they return to freedom.

controls exerted during incarceration can overcome the lack of compliance that sometimes causes treatment failures in outside society (Maremmani et al. 2004).

An innovative model developed in the New York Metropolitan area in 1987 – called, KEEP (Key Extended Entry Program) – enables opioid-dependent offenders to be maintained on methadone during their stay at Rikers Island Correctional Facility (CSAT 2005b). In 2001, it was reported that KEEP has 4,000 inmates admitted to MMT annually, and upon release approximately 80% of them report to their assigned community MMT programs for continued treatment, which has resulted in significantly decreased criminal recidivism among these individuals (Parrino and McNicholas 2002; Tomasino et al. 2001).

Several options have been recommended for consideration by jail and prison authorities throughout the U.S. for providing MMT within their facilities:

- Become a satellite of a community-based MMT program;
- Arrange for a local MMT program to deliver and distribute methadone;
- Become legally certified to operate an MMT program within the correctional facility, which is possible via the National Commission on Correctional Health Care (see NCCHC 2004).

Based on the successes of interventions such as the Rikers Island model, a small but growing number of correctional facilities in various states have expressed an interest in using or have already successfully tested methadone maintenance in treating chronic opioid dependence among inmates (Parrino 2005).

A Continuing Commitment to Evidence-Based Approaches Is Needed

Opioid addiction itself is likely to incur confrontations with authorities and legal problems, and these incidents may be viewed as opportunities to engage offenders in a therapeutic program of addiction recovery (Maremmani et al. 2004). Approaches seeking merely to achieve and enforce a drug-free state, without a component of relapse prevention, do not offer any assurances that abstinence will be maintained over time. And, in fact, research suggests that relapse is highly probable in opioid-addicts who do not receive effective and long-term medication-assisted therapies.

Evidence supporting the implementation of MMT within the criminal justice system is abundant and compelling. Combining court supervision and community-based treatment for opioid-addicted offenders reduces the risks of both relapse to illicit-drug use and recidivism to drug-related criminal behaviors (NIH 1999b; Rich et al. 2005a).

For incarcerated offenders, past and current experiences have demonstrated unequivocally that MMT is an extremely effective method of reducing relapse and recidivism. It also helps assure that offenders will gain access to important community services upon release for increasing their chances of becoming law abiding and productive citizens (Maremmani et al. 2004).

It is vital that criminal justice system authorities strengthen their commitment to evidence-based medication-assisted therapies and seek through ongoing education and training to overcome any ideological biases or unfounded beliefs that prevent the application of “good science” to addiction treatment. In sum, the realities of opioid addiction as a disease and the fact that it can be effectively treated via methadone maintenance should be more widely recognized and acted upon at all levels in the criminal justice system.

A growing number of correctional facilities have expressed an interest in using or have already successfully tested MMT in treating opioid dependence among inmates.



Opioid addiction as a disease, and its effective treatment via MMT, should be more widely recognized and acted upon by the criminal justice system.

References

- Amen DG. Why don't psychiatrists look at the brain? The case for greater use of SPECT imaging in neuropsychiatry. *Neuropsych Rev.* 2001;2(1).
- Barnett PG, Rodgers JH, Bloch DA. A meta-analysis comparing buprenorphine to methadone for treatment of opioid dependence. *Addiction.* 2001;96:683-690.
- Christoff A. Continuing care: reexamining the drug court recovery environment. *NADCP News.* 2005;12(2):18.
- CSAT (Center for Substance Abuse Treatment). Methadone Associated Mortality: Report of a National Assessment. Rockville, MD: CSAT; 2004. Publication No. 28-03.
- CSAT (Center for Substance Abuse Treatment). Forging Links to Treat the Substance-Abusing Offender. TIE (Treatment Improvement Exchange) Communique. Rockville, MD: CSAT; 1993(Spring).
- CSAT (Center for Substance Abuse Treatment). Medication-Assisted Treatment for Opioid Addiction in Opioid Treatment Programs. Treatment Improvement Protocol (TIP) Series 43. Rockville, MD: CSAT; 2005a. DHHS Pub No (SMA) 05-4048.
- CSAT (Center for Substance Abuse Treatment). Substance Abuse Treatment for Adults in the Criminal Justice System. Treatment Improvement Protocol (TIP) Series 44. Rockville, MD: CSAT; 2005b. DHHS Pub No (SMA) 05-4056.
- DoJ (U.S. Department of Justice). National Drug Threat Assessment 2004. Washington, DC: National Drug Intelligence Center, U.S. DoJ; April 2004.
- Dole VP. Implications of methadone maintenance for theories of narcotic addiction. *JAMA.* 1988;260:3025-3029.
- Federal Register. Opioid drugs in maintenance and detoxification treatment of opiate addiction; final rule. 2001 (Jan 17);66(11):4085. 42 CFR Part 8.
- Finigan MW. Assessing cost off-sets in a drug court setting. *National Drug Court Institute Review.* 1999;2(2):59-91.
- Fiscella K, Moore A, Engerman J, Meldrum S. Management of opioid detoxification in jails. *J Addict Dis.* 2005;24(1):61-71.
- Fiscella K. Methadone absent in many jails. *CorrectCare.* 2005 (Winter). Available at: <http://www.ncchc.org/pubs/CC/methadone.html>. Access checked 1/27/06.
- Gordon NB. The functional potential of the methadone maintained person. CDRWG Monograph #2. Chemical Dependency Research Working Group: The New York State Office of Alcoholism and Substance Abuse Services. December 1994:43-46.
- Hora PF. Trading one drug for another? What drug treatment court professionals need to learn about opioid replacement therapy. *J Maint Addict.* 2004;2(4):71-76.
- Huddleston III CW, Freeman-Wilson K, Marlowe DB, Roussell A. Painting the Current Picture: A National Report Card on Drug Courts and Other Problem Solving Court Programs in the United States. Vol 1, No 2. Alexandria, VA: National Drug Court Institute; 2005 (May).
- Joseph H, Stancliff S, Langrod J. Methadone maintenance treatment (MMT): a review of historical and clinical issues. *Mt Sinai J Med.* 2000;67(5-6):347-364.
- Karberg JC, James DJ. Substance dependence, abuse, and treatment of jail inmates, 2002. Washington DC: US Dept of Justice; 2005 (July).
- Kauffman JF, Woody GE. Matching Treatment to Patient Needs in Opioid Substitution Therapy. Treatment Improvement Protocol (TIP) Series 20. Rockville, MD: U.S. Department of Health and Human Services; Center for Substance Abuse Treatment;1995. DHHS Pub# (SMA) 95-3049.
- Krantz MJ, Mehler PS. Treating opioid dependence. Growing implications for primary care. *Arch Int Med.* 2004;164:277-288.
- Kreek MJ. A personal retrospective and prospective viewpoint. In: Parrino MW. State Methadone Treatment Guidelines. Treatment Improvement Protocol (TIP) Series 1. Rockville, MD: U.S. Department of Health and Human Services; Center for Substance Abuse Treatment;1993:133-143. DHHS Pub# (SMA) 93-1991.
- Kristensen O, Espegren O, Asland R, Jakobsen E, Lie O, Seiler S. A randomised clinical trial of methadone vs. buprenorphine to opioid dependants. *Tidsskr Nor Laegeforen.* 2005;125(2):148-151.
- Leavitt SB. Methadone dosing & safety in the treatment of opioid addiction. *Addiction Treatment Forum* [special report]. 2003. Available at: <http://www.atforum.com>.
- Ling W, Wesson DR, Charuvastra C, Klett CJ. A controlled trial comparing buprenorphine and methadone maintenance in opioid dependence. *Arch Gen Psychiatry.* 1996;53:401-407.
- Maremmani I, Pacini M, Lovrecic M. Clinical foundations for the use of methadone in jail. *Heroin Add & Rel Clin Probl.* 2004;6(2-3):53-70.
- Marlowe DB, DeMatteo DS, Festinger DS. A sober assessment of drug courts. *Federal Sentencing Reporter.* 2003(Oct);16(1):113-128.
- NADCP (National Association of Drug Court Professionals). Congress slashes drug court program to \$10 million. Action Alert. Alexandria, VA: NADCP; December 23, 2005.
- Nadelman E, McNeely J. Doing methadone right. *The Public Interest.* 1996;123:83-93.
- NCCHC (National Commission on Correctional Health Care). NCCHC accreditation paves the way for correctional opioid treatment programs. *Correct-Care.* 2004 (Winter). Available at: <http://www.ncchc.org/accred/OTP.html>. Access checked 3/20/06.
- Nestler EJ, Malenka RC. The addicted brain. *Scientific American.* March 2004.
- NIDA (National Institutes on Drug Abuse). Heroin Abuse and Addiction. Research Report Series; October 1997. NIH Pub# 97-4165.
- NIDA (National Institutes on Drug Abuse). Infectious diseases and drug abuse. *NIDA Notes.* August 1999a;14(2):15. NIH pub #99-3478.
- NIDA (National Institutes on Drug Abuse). Principles of Drug Addiction Treatment: A Research-Based Guide. 1999b(Oct). NIH pub #99-4180. Available at: <http://www.nida.nih.gov/PDF/PODAT/PODAT.pdf>. Access checked March 15, 2006.
- NIH (National Institutes of Health). Effective Medical Treatment of Opiate Addiction. NIH Consensus Statement. 1997(Nov);15(6).
- NSDUH (National Survey on Drug Use and Health). Washington, DC: Substance Abuse and Mental Health Services Administration; 2003.
- OASAS (Office of Alcoholism and Substance Abuse Services). Heroin; Get The Facts. Albany, NY: New York State OASAS; 1997.
- ONDCP (Office of National Drug Control Policy). Policy Paper: Opioid Agonist Treatment. Washington, DC: ONDCP; March 1999.
- ONDCP (Office of National Drug Control Policy). Six million Americans in denial about drug addiction [press release]. Washington, DC; ONDCP: January 26, 2006.
- Parrino MW, McNicholas L. Methadone maintenance and other pharmacotherapeutic interventions in the treatment of opioid dependence. *Drug Court Practitioner Fact Sheet, Vol III, No 1.* Alexandria, VA: National Drug Court Institute; 2002 (Apr). Available at: http://www.aatod.org/fact_drug_court.html. Access checked January 26, 2006.
- Parrino MW. AATOD: Progress on major policy initiatives. *J Main Addict.* 2005;3(1):5-11.
- Payte JT, Khuri ET. Treatment duration and patient retention. In: Parrino MW. State Methadone Treatment Guidelines. Treatment Improvement Protocol (TIP) Series 1. Rockville, MD: U.S. Department of Health and Human Services; Center for Substance Abuse Treatment;1993:119-124. DHHS Pub# (SMA) 93-1991.
- Payte JT, Zweben JE, Martin J. Opioid maintenance treatment. In: Graham AW, et al., eds. *Principles of Addiction Medicine.* 3rd ed. Chevy Chase, MD: American Society of Addiction Medicine; 2003:751-766.
- Payte JT. A brief history of methadone in the treatment of opioid dependence: a personal perspective. *J Psychoactive Drugs.* 1991;23(2):103-107.
- Rettig RA, Yarmolonsky A (eds). *Federal Regulation of Methadone Treatment.* Committee on Federal Regulation of Methadone Treatment; Division of Biobehavioral Sciences and Mental Disorders; Institute of Medicine (IOM). Washington, DC: National Academy Press; 1995.
- Rich JD, Boutwell AE, Shield DC, Key RG, McKenzie M, Clarke JG, Friedmann PD. Attitudes and practices regarding the use of methadone in U.S. State and Federal prisons. *J Urban Health.* 2005a(May).
- Rich JD, McKenzie M, Shield DC, et al. Linkage with methadone treatment upon release from incarceration: a promising opportunity. *J Addict Dis.* 2005b;24(3):49-59.
- Rosenblum A, Magura S, Joseph H. Ambivalence toward methadone treatment among intravenous drug users. *J Psychoactive Drugs.* 1991;23(1):21-25.
- SAMHSA (Substance Abuse and Mental Health Services Administration). Percentage increase in hospital emergency department visits associated with opioid analgesics, 1994-2001. Rockville, MD: SAMHSA; 2002. DAWN Series D-23, DHHS Publication No. (SMA) 03-3781.
- SAMHSA (Substance Abuse and Mental Health Services Administration). About Buprenorphine Therapy. Bethesda, MD: SAMHSA; 2004a.
- Stine SM, Greenwald MK, Kosten TR. Pharmacologic therapies for opioid addiction. In: Graham AW, et al., eds. *Principles of Addiction Medicine.* 3rd ed. Chevy Chase, MD: American Society of Addiction Medicine; 2003:735-750.
- Tomasino V, Swanson AJ, Nolan J, Shuman HI. The Key Extended Entry Program (KEEP): A methadone treatment program for opiate-dependent inmates. *Mt Sinai J Med.* 2001;68(1):14-20.
- WHO (World Health Organization). *Neuroscience of Psychoactive Substance Use and Dependence.* Geneva: WHO; 2004.
- Zacny J, Bigelow G, Compton P, et al. College on Problems of Drug Dependence taskforce on prescription opioid non-medical use and abuse: position statement. *Drug Alcohol Depend.* 2003;69:215-232.
- Zarkin GA, Dunlap LJ, Hicks KA, Mamo D. Benefits and costs of methadone treatment: results from a lifetime simulation model. *Health Econ.* 2005;14(11):1133-1150.

ADDICTION TREATMENT

Forum

is published by: Clinco Communications, Inc.
P.O. Box 685
Mundelein, IL 60060

© 2006 Stewart B. Leavitt, PhD

A.T. Forum is made possible by an educational grant from Mallinckrodt Inc., a manufacturer of methadone & naltrexone.

April 2006