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Drug Use Disorders and Recovery

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1. Introduction

Drug abuse and dependence disorders are chronic but treatable brain diseases, involving compulsive drug-seeking and -using behaviors that persist despite immediate or potentially harmful consequences for users and their families and communities. Drug abuse and dependence are serious threats to public health and safety, costing hundreds of billions of dollars in yearly healthcare expenditures, crime, poor work productivity, and job loss (Hoffman & Fromeke, 2007). For example, illegal drug use in the United States cost nearly 200 billion dollars in 2002; approximately two-thirds of the costs (129 billion) were economic losses attributable to people's inability to work because of drug-precipitated illness, premature death, or incarceration. The treatment of the healthcare problems of drug addicts cost 16 billion dollars, while drug-related criminal justice and welfare costs totaled 36 billion dollars in 2002 (Office of National Drug Control Policy, 2004). Addiction also can result in intangible costs, such as homelessness, academic failure, and troubled relationships, and is one of the most pervasive and intransigent mental health disorders in the world, affecting the thoughts, feelings, and behaviors of millions of people annually (World Health Organization, 2004).

2. Drug effects and classification

Drugs are psychoactive substances that change moods and behaviors by altering brain chemistry and function (Hyman & Malenka, 2001). Drugs of abuse include medically prescribed (e.g., barbiturates and pain relievers), legal (e.g., alcohol and nicotine), and illegal (e.g., marijuana and heroin) substances. Some drugs, such as alcohol, have been used since ancient times, whereas others, such as methamphetamine and designer drugs (e.g., Ecstasy), are relatively new. People consume drugs to feel good (some drugs produce euphoria, confidence, and relaxation), to keep from feeling bad (some drugs combat anxiety, depression, and hopelessness), to accelerate performance (some drugs sharpen attention and enhance physical strength and athletic prowess), and to experience altered sensory perceptions (some drugs cause visual, auditory, or tactile hallucinations) (National Institute on Drug Abuse [NIDA], 2007).

Drugs of abuse can be classified into five groups according to effects. The first class consists of stimulants, which increase alertness and decrease fatigue; examples include

amphetamines, Benzedrine, caffeine, Dexedrine, ephedrine, and nicotine. The second class consists of depressants, which reduce tension, alleviate nervousness, and induce sedation. Among these drugs are Nembutal, Seconal, Tunial, Veronal, Valium, and Xanax. The third class, hallucinogens, changes sensory perceptions; examples include cannabis, Lysergic Acid Diethylamide (LSD), Mescaline, Phencyclidine (PCP), and psilocybin. The fourth class consists of opiates, which induce sleep, euphoria, and relaxation as well as relieve pain and anxiety; opiates include codeine, heroin, opium, OxyContin, Percodan, and morphine. The fifth class consists of performance enhancers; they increase athletic strength and speed and stimulate the growth and recovery of skeletal muscles. Anadrol, Depo-Testosterone, Dianabol, and Winstrol are some examples of such performance enhancers (Abadinsky, 2007).

Drug abusers typically prefer one class of drugs over others. However, when they have difficulty obtaining their drug of choice, they often turn to other drugs in the same class that produce similar effects. Psychoactive drugs in the same class can be compared on the basis of their potency and efficacy. The potency of a drug is the amount that must be ingested to produce a desired effect whereas efficacy is a drug's ability to produce a desired effect regardless of dosage. Both the strength and the potency of a substance can determine an abuser's drug of choice as well as the drug's potential for abuse and dependence (see below) (NIDA, 2007).

3. The addictive process

Drug use can escalate to substance use disorders: abuse or dependence. The progression to uncontrolled use depends on several risk factors. For example, biological factors play a role in addiction; in other words, genetics can predispose a person to addictive behavior—a predisposition that is shared among close biological relatives. Scientists estimate that genes account for nearly half of a person's vulnerability to a substance use disorder (NIDA, 2007). Age of first use and psychiatric history are also important factors for explaining drug use problems. Younger users are more likely to become addicted because developing adolescent brains are more susceptible to a drug's ability to change brain chemistry and functions. Likewise, people with mental illness are also more likely to abuse or become dependent on drugs. In addition, a person's exposure to a parent's or a peer's use of drugs can increase his or her risk of addiction. The mode of drug ingestion can also raise the potential for abuse and dependence: a drug that is inhaled or injected is more addictive than one that is ingested orally. Inhalation and injection send the drug to the brain faster and produce more intense highs and lows. Drug-seeking behavior intensifies in response to the cycle of peaks and valleys that the user experiences (Hoffman & Fromeke, 2007).

Psychoactive drugs are thought to become addictive through their activation of the brain's mesocorticolimbic dopamine pathway, extending from the brain's ventral tegmental area to the nucleus accumbens to the frontal cortex. Drugs of abuse stimulate this pleasure circuit by increasing the amount of dopamine in the brain two- to ten-fold, creating an extremely pleasurable experience for users that compels them to repeat the incident. Drugs of abuse either mimic the effects of dopamine on neurotransmitters (i.e., they act as agonists) or block the re-absorption of dopamine so that it can continue to activate neurons (i.e., they act as antagonists). Eventually, the brain shuts down its own production of dopamine, causing the user to ingest the drug merely to stave off feelings of listlessness, depression, and other withdrawal symptoms. Drugs of abuse also affect the brain's frontal regions, impairing

judgment and leading addicts to crave drugs even as the rewards of use steadily diminish. Hence, relapses—a return to drug use after a period of abstinence—are common among people with substance use disorders and can be triggered by stress, mood changes, and cues that remind the abuser of the substance (Karch, 2007; NIDA, 2007).

4. Substance use disorders

Substance abuse and dependence disorders are diagnosed according to criteria in the American Psychiatric Association's Diagnostic and Statistical Manual IV-TR (American Psychiatric Association, 2007). A substance abuse disorder is diagnosed when drug use in the previous 12 months has led to significant distress and impairment in functioning and meets at least one of several diagnostic criteria—namely, failure to fulfill obligations at work, school, or home; recurring use of substances in dangerous situations (e.g., driving while intoxicated); recurring substance use-related criminal justice involvement; and continued substance use that leads to interpersonal conflicts.

A drug-dependence disorder—more serious than a drug-abuse disorder—is diagnosed when drug use in the previous 12 months has reached the level of abuse and meets at least three of seven criteria that include tolerance (i.e., increasing amounts of the drug must be taken to achieve desired effects), physical withdrawal (i.e., symptoms that accompany the cessation of drug use, such as tremors, chills, drug craving, restlessness, bone and muscle pain, sweating, and vomiting), and persistent failure to reduce drug consumption.

5. Prevalence of drug use and substance use disorders

The National Survey on Drug Use and Health assesses the prevalence of substance use and substance use disorders in the United States. In 2005, an estimated 20 million Americans age 12 or older (or 8 percent of the total population in this age group) reported having used an illicit substance in the previous month; marijuana was the most commonly used drug (15 million), followed by cocaine (2 million), hallucinogens (1 million), methamphetamine (580,000), and heroin (166,000). Meanwhile, an estimated 22 million people age 12 or older were classified with a substance abuse or dependence problem (9 percent of the population). Among them, more than 3 million were classified with abuse of or dependence on both alcohol and illicit drugs; more than 3.5 million had abused or were dependent on illicit drugs but not alcohol; and more than 15 million had abused or were dependent on alcohol but not illicit drugs (Substance Abuse and Mental Health Services Administration, 2007).

In 2005, the order of lifetime illicit drug use among members of the general population paralleled past-month illicit drug use in 2005. Nearly half (46 percent) of people age 12 or older reported the lifetime use of any illicit substance. The most popular drug was marijuana (40 percent), followed by powder or crack cocaine (17 percent), hallucinogens (14 percent), methamphetamine (4 percent), and heroin (2 percent).

6. A public health approach to addiction

The most widely used definition of *health* is found in the World Health Organization's (WHO) 1948 charter: "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." This definition was expanded by the WHO in its 1986 *Ottawa Charter for Health Promotion* in order to underscore the notion that

health is “a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources as well as physical capacities” (WHO, 1986, p. 11). By this definition, drug addiction is a serious public health problem that adversely affects all of these domains. As I have discussed in this chapter, drug abuse and dependence are formidable threats to public health and safety, costing hundreds of billions of dollars in yearly healthcare expenditures, crime, poor work productivity, and job loss (Hoffman & Fromeke, 2007; United Nations Office on Drugs and Crime, 2006). Treating addiction as a crime rather than a health problem compounds its negative impact on individuals and communities in terms of public health and safety. Not only do most addicted ex-offenders emerge from behind bars with untreated substance use disorders, but they are likely to have been exposed to a variety of contagious diseases in prison, to have learned criminogenic behaviors that discourage contributive citizenship, and to have lost connections with family and friends whose support is critical for their healthy reintegration into society.

7. Importance of treatment

Prevention and education programs for nonusers and treatment programs for users are widely recognized as the most effective means of decreasing the demand for drugs. However, throughout the long history of the drug war, approximately two-thirds of government expenditures have been on supply reduction efforts. Numerous experts acknowledge that supply-side interventions have done little to curtail drug use or the violence that accompanies the sale and distribution of illegal drugs in the United States (MacCoun & Reuter, 2001). Moreover as I noted above, prohibition and strict penalties for drug possession and sales have spawned many unanticipated problems. Nonetheless, few government officials are willing to shift the emphasis of the war on drugs away from punitive measures and toward treatment and rehabilitation programs for people with substance use disorders. Most politicians are particularly reluctant to decry punitive drug policies out of fear of being labeled as “soft on crime” and losing the support of their constituents (Kleinman, 1992; Nadelmann, 1989).

Offenders with drug use problems are a diverse group, and the relationship between drugs and crime is complicated (Bureau of Justice Statistics, 1991). Offenders become addicted to drugs and commit crimes as a result of various events in their lives (Lurigio & Swartz, 1999). Whatever the road to addiction and criminality, drug control policies must fully incorporate what research has consistently shown: drug addiction is a chronic relapsing brain disease with biological, psychological, social, and behavioral concomitants. Therefore, programs for drug-abusing offenders should be comprehensive and include a wide range of treatment and adjunctive social services (Gerstein & Harwood, 1990).

One of the most successful examples of drug treatment as an alternative to incarceration has been Arizona’s Proposition 200, the Drug Medicalization, Prevention and Control Act of 1996. This initiative prohibits incarceration for first- and second-time non-violent drug offenders, mandating probation and drug treatment instead of prison. A 1999 evaluation of the initiative by the Arizona Supreme Court found that it saved taxpayers 2.6 million dollars annually. Furthermore, nearly 75% of the drug offenders who had been sentenced to probation and drug treatment as a result of Proposition 200 remained drug-free during their participation in the program and paid their own money to offset the cost of treatment (Arizona Supreme Court, 1999).

A similar initiative in California has also significantly reduced incarceration rates and criminal justice expenditures. California's Proposition 36, the Substance Abuse and Crime Prevention Act (SACPA), allows first- and second-time non-violent drug offenders to enter substance abuse treatment programs as opposed to being incarcerated. Although the impact of SACPA varied by county based on the characteristics of drug treatment programs (in-patient vs. outpatient, duration of treatment), results showed that after 5 years, SACPA reduced the prison population of those convicted of drug possession by 27%. This resulted in an estimated savings of \$350 million in prison costs alone (Ehlers & Ziedenberg, 2006). The costs associated with arrests and convictions were also significantly lower among drug offenders who completed treatment, compared to those who never entered treatment and those who entered but did not complete treatment (Longshore, Hawken, Urada, & Anglin, 2006). California saved more than \$2.50 for every dollar spent on drug treatment; for those who completed treatment, the savings increased to \$4 saved for every dollar spent (UCLA, 2007).

Studies of substance abuse treatment for drug offenders have repeatedly demonstrated the success of these programs in reducing drug use and its attendant problems, as well as in significantly decreasing the costs associated with crime and the criminal justice system. Drug treatment programs have proven effective as an alternative to incarceration and as a prison-based, post-release, or work-release intervention for addicted offenders. Hence, drug treatment is suitable for a wide range of offenders, and it is a cost-effective intervention at various points in the criminal justice process.

Considerable research shows the crime-reducing benefits and cost effectiveness of treatment relative to other antidrug measures (e.g., interdiction) and supports a greater investment in drug treatment (Anglin & Hser, 1990). Nonetheless, the treatment infrastructure in the criminal justice system has eroded over the past several years, a disheartening development that bodes ill for future efforts to control crime and reduce illegal drug use (Lipton, 1995). For example, despite record numbers of people incarcerated for drug crimes, the proportion of drug offenders who received drug treatment in prison declined throughout the 1990s and remained at a low level during the early 2000s (Belenko, Patapis, & French, 2005; Inciardi, 1996).

The economic benefits of drug treatment accrue mostly from reductions in incarceration, criminal victimization, medical treatment, and lost wages (Hoffman & Fromeke, 2007). A recent study in California found that the state saved \$7,500 in aggregate reductions in crime and incarceration for every addicted person treated (Ettner, Huang, Evans, Ash, Hardy, Jourabchi, & Hser, 2007). A similar study found that every dollar spent on drug treatment resulted in an average savings of seven dollars, stemming from decreased crime and its corollaries (e.g., increased employment and major reductions in healthcare expenditures) (McCarthy, 2007). In an extensive review of hundreds of studies of drug treatment programs, Belenko, Patapis, and French (2005) found that drug treatment reduces drug use and crime, incarceration, and victimization as well as health care expenses and other medical costs. Belenko et al. (2005) concluded that "it is clear from research on the economic impacts of substance abuse addictions on health, crime, social stability, and community well-being that the costs to society of *not* (authors' italics) treating persons with substance abuse problems would be quite substantial" (p. 58).

8. Types of drug treatment: A brief overview

As I mentioned previously in this chapter, addiction is a recurring disease that often requires repeated episodes of treatment. The ultimate goal of treatment is sustained

abstinence. During the process of recovery, treatment is designed to improve overall functioning while minimizing the social and medical consequences of substance abuse and dependence disorders. The recovery process begins with treatment and progresses as addicts gain insights into their uncontrolled use of alcohol and drugs and start to manage their thoughts, feelings, and behaviors (Center for Health and Justice, 2006).

The course of treatment for drug-dependent persons follows a general therapeutic process and lies on a continuum of care (NIDA, 2006b). Drug treatment encompasses a broad range of services, including detoxification, educational and vocational training, urine testing, counseling, HIV education and prevention, life and interpersonal skills training, psychiatric care, pharmacotherapy, psychotherapy, relapse prevention strategies, and self-help groups (see section on drug treatment principles below) (Anglin & Hser, 1990; Hoffman & Fromeke, 2007; Peters, 1993). Depending on the nature and severity of the addiction and an individual's progress toward recovery, treatment can occur at various levels and in diverse settings: inpatient, intensive outpatient, outpatient, or sobriety maintenance (Center for Health and Justice, 2006). NIDA (2006b) classifies treatment into two broad categories: pharmacological and behavioral.

The use of medication in recovery typically begins during detoxification. Persons who are physically dependent on alcohol and drugs are placed on medications to safely alleviate the painful symptoms and control the adverse physical consequences of withdrawal. Medication is used in the treatment and relapse prevention process to "help re-establish normal brain function and to prevent relapse and diminish [drug] cravings" (NIDA, 2006b, p. 3). For example, buprenorphine and methadone effectively treat opiate addiction by blocking withdrawal symptoms and reducing drug cravings. The passage of the Drug Addiction Treatment Act in 2000, permits physicians to prescribe these medications in medical settings; previously, such medications could be dispensed only in specialized drug treatment clinics. Promising new medications for drug addiction are pending FDA approval, including Baclofen (for cocaine addiction), Nalmefene (for opiate addiction), Topiramate (for alcohol, opiate, and cocaine addiction), and Disulfiram (for cocaine addiction [although for many years used for alcohol addiction]) (Hoffman & Fromeke, 2007).

Behavioral therapy consists of interventions designed to change addicts' attitudes and behaviors as well as help them acquire the skills and competencies they need to avoid relapses. Several behavioral approaches have proved successful in treating addicts – used by themselves or in combination with medications. The most common are cognitive behavioral therapy (helps addicts avoid relapse triggers), multidimensional family therapy (focuses on adolescents and their peers and family members), motivational enhancement therapy (capitalizes on addicts' readiness to change their behaviors and begin treatment), and motivational incentive therapy (employs positive reinforcement and contingency management techniques to promote abstinence) (NIDA, 2006b).

9. Drug treatment studies

Abundant research demonstrates that drug treatment reduces illegal drug use, crime, and recidivism in the general and correctional population (Anglin & Hser, 1990; Anglin et al., 1996; Gerstein & Harwood, 1990; Office of Technology Assessment, 1990). Since the 1960s, numerous studies at the local, state, and federal levels have shown that drug treatment works (Lurigio, 2000). The best research on drug treatment consists of large-scale,

federally funded studies that involve large samples of participants and employ longitudinal designs and a comprehensive range of outcome measures. These studies have provided the most compelling evidence that addiction is a treatable disease and have identified the principles of drug treatment that characterize the most useful and effective programs (see below).

10. Large-scale studies of drug treatment

Three large-scale, multisite investigations, funded by NIDA, strongly support the conclusion that drug treatment works: the Drug Abuse Reporting Program (DARP), the Treatment Outcome Prospective Study (TOPS), and the Drug Abuse Treatment Outcome Study (DATOS). These evaluations of community-based treatment have contributed greatly to our knowledge about the benefits of drug treatment and significantly influenced drug treatment policies, programs, and research (Gerstein & Harwood, 1990; McLellan, Metzger; Alterman, Cornish, & Urschel, 1992; Simpson, Chatham, & Brown, 1995). As Lillie-Blanton (1998) stated, "these studies are generally considered by the research community to be the major evaluations of drug abuse treatment effectiveness, and much of what is known about 'typical' drug abuse treatment outcomes comes from these studies" (p. 3).

10.1 Drug abuse reporting program

DARP involved more than 44,000 persons admitted to drug treatment between 1969 and 1973. Participants were in 52 federally funded treatment programs that administered four types of treatment modalities: methadone maintenance, therapeutic communities, outpatient drug-free treatment, and detoxification. Conducted by researchers at Texas Christian University, data were collected through client interviews with treated clients and persons who applied for treatment but never returned for services (intake-only clients). Information was also collected from clients' progress reports and other program records. Follow-up intervals occurred from 3 to 12 years after treatment. "The DARP findings have been widely used to support continued public funding of drug-abuse treatments and to influence federal drug policy in the United States" (DARP, 2007, p.3)

DARP found that clients' daily use of opiates declined from 100 percent prior to treatment to 36 percent in the first year after treatment and to 24 percent 3 years after treatment. In the DARP study, addicts who were in treatment for more than 90 days were significantly less likely to use drugs in the year after treatment than those who were in treatment for fewer than 90 days (Simpson & Sells, 1982). Outpatient drug-free treatment, methadone maintenance, and therapeutic communities were equally effective at producing positive outcomes; clients in detoxification programs or those who dropped out of treatment within 3 months showed no positive outcomes. Moreover, among drug treatment clients in general, arrest rates declined 74 percent and employment rates increased 24 percent after treatment. Twelve years after treatment, daily heroin use remained 74 percent lower (Simpson, 1993; Simpson & Sells, 1982, 1990).

Approximately three-fourths of the opiate addicts studied in DARP reported at least one relapse to daily use after they had experienced a period of sobriety. The highest percentage of addicts (85%) who quit using drugs, did so while in treatment. The most common reasons reported for staying sober referred primarily to the adverse consequences of addiction. For example, 83 percent of the treatment participants indicated that they quit because they were

“tired of the hustle,” 56 percent, because they were “afraid of going to jail,” and 54 percent, because they had to “meet family responsibilities” (Simpson & Sells, 1990).

10.2 Treatment outcome prospective study

TOPS involved 11,000 people admitted from 1979 through 1981 to 41 drug treatment programs in 10 cities. Three types of programs were examined—outpatient drug free, residential, and methadone maintenance—and clients were followed 1, 2, and 3 to 5 years after treatment. TOPS found that drug treatment reduced drug use for as many as 5 years after a single treatment episode; different treatment modalities appeared to be equally effective in helping drug users recover. Declines in drug use were most dramatic among heroin and cocaine users (Hubbard et al., 1989)

TOPS also produced solid evidence that drug treatment reduces drug users' criminal activities. Three to 5 years after treatment, the proportion of clients engaged in pretreatment predatory crimes decreased by one-third to one-half among the three treatment modalities. Moreover, TOPS demonstrated that drug treatment is cost-effective and cost-beneficial; data showed that the costs of treatment were recouped largely during treatment and that additional cost savings accrued with reductions in post-treatment drug use. Criminal justice savings were significant. Researchers reported a 30 percent decline in costs to victims of drug-related crimes and a 24 percent decline in costs to the criminal justice system (Harwood, Collins, Hubbard, Marsden, & Rachal, 1988). TOPS' principal investigators, Hubbard et al. (1989), concluded that "publicly funded drug abuse treatment is essential to our national effort to reduce the demand for drugs and its related social and economic costs" (p. 12)

10.3 Drug abuse treatment outcome study

DATOS, the third NIDA-funded comprehensive evaluation of drug abuse treatment (Leshner, 1997), followed a sample of 10,000 clients in 96 programs located in 11 large- and medium-sized cities in the United States for 36 months, from 1991 through 1993. DATOS participants were selected from four treatment programs: outpatient drug-free, outpatient methadone maintenance, short-term inpatient, and long-term residential. According to Leshner (1997), DATOS was “the first national study of treatment outcomes since the AIDS epidemic began, the first to examine outcomes for community-based cocaine abuse treatment, the first since the transition to NIDA block grants in 1981, and the first to include public and private short-term inpatient hospitals as a treatment modality” (p. 211) (also see Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997).

DATOS found that a larger percentage of drug-free outpatients than similar TOPS participants were involved in the criminal justice system and that clients with psychiatric disorders were more likely to be poly-drug users (Flynn, Craddock, Luckey, Hubbard, & Duntzman, 1996). Drug treatment significantly reduced drug use from pretreatment baseline levels to 12-month post-treatment levels for persons addicted to heroin, cocaine, and other types of drugs (Hubbard, et al., 1997; Simpson, Brown, & Joe 1997). DATOS also found that ancillary services for addicts had declined, but drug treatment programs were delivering core services (i.e., assessment, treatment, and aftercare) more effectively than they had in the DARP and TOPS studies (Etheridge, Hubbard, Anderson, Craddock, & Flynn, 1997).

In a five-year study of cocaine addicts, DATOS researchers reported that treatment reduced cocaine use from 100 percent at intake to 25 percent 5 years after discharge from treatment. Illegal activity declined from 40 percent in year 1 post-treatment to 25 percent in year 5 post-treatment. In general, the study found that clients with more serious drug and psychosocial problems at intake had poorer outcomes in treatment. However, more exposure to treatment was related to more positive long-term outcomes (Simpson, Brown, & Joe, 1997).

11. National treatment improvement evaluation study

Another federally funded, national evaluation of drug treatment was the National Treatment Improvement Evaluation Study (NTIES). Funded by the Center for Substance Abuse Treatment and conducted by the National Opinion Research Center and the Research Triangle Institute, NTIES used a highly rigorous methodology and extensive outcome measures. The purpose of the project was to investigate the impact of drug treatment on more than 4,000 clients in publicly supported drug treatment programs across the country. NTIES found that drug treatment had numerous favorable effects on clients, including reductions in drug use. For example, one year after treatment, clients' use of heroin dropped from 73 to 38 percent while cocaine use dropped from 40 to 18 percent. The study also found post-treatment reductions in arrests rates, self-reported criminal activities, drug selling, and illegal earnings. Among treatment participants, homelessness, unemployment, and welfare dependency declined while overall physical and mental health problems became less severe. Moreover, participants engaged in safer sex practices after drug treatment than before; specifically, the percentage of participants who reported having sex for money declined 56 percent, and the number who had sex with an intravenous drug user declined 51 percent (Substance Abuse and Mental Health Services Administration [SAMHSA], 2007).

12. Services research outcome study

The Services Research Outcome Study (SROS), conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA), was the first nationally representative study of drug treatment in the United States. SROS involved 1,800 participants in inpatient, outpatient, and residential care who were discharged in 1990 from a random sample of 100 facilities in rural, suburban, and urban areas nationwide. Five years after treatment, participants were interviewed; the results showed consistent reductions in drug use – namely, 45 percent in cocaine use, 28 percent in marijuana use, 17 percent in crack cocaine use, and 14 percent in alcohol and heroin use. The study also reported 23 to 38 percent reductions in criminal activity, such as burglary, the selling of drugs, and prostitution. Finally, after completing drug treatment, participants were less likely to be involved in physically abusive relationships or to attempt suicide and were more likely to live in secure housing (SAMHSA, 1998).

13. Principles of effective drug treatment

Several basic principles underlie and characterize successful drug treatment practices. These principles have largely been derived from studies of whether and how drug treatment works to change addicts' behaviors; many of these studies were discussed earlier in this chapter (Anglin et al., 1996, 1998; Prendergast, Anglin, & Wellisch, 1995; Taxman & Spinner,

1997). With funding and guidance from NIDA, researchers explored the implementation of drug treatment programs and their effects on a variety of populations. Their aggregate findings led to the identification of core program elements that assist addicts in achieving sobriety and improving their lives in many areas of functioning (NIDA, 2006a; 2006b). The following is a synthesis and distillation of NIDA's principles of effective drug-treatment programs.

13.1 Drug assessment and treatment matching

The first principle is that no single drug treatment regimen is useful for all addicts (NIDA, 2006a). To develop successful treatment approaches, tailored to each client's addiction and service needs, clinical evaluations must be conducted to assess the specific nature and extent of clients' substance use disorders. The fundamental clinical question is what type of treatment or intervention is most appropriate for what type of client, in which type of setting, and for what length of time (NIDA, 2006a).

A crucial first step in the formulation of an individualized treatment plan is the use of comprehensive and standardized assessment protocols that collect accurate information about a client's current and previous drug use; criminal history; medical conditions; drug and psychiatric treatment experiences; education and employment records; cognitive, psychological, and interpersonal adjustment; and social support networks (Anglin et al., 1996). Before treatment begins, a client's readiness and motivation for change must also be thoroughly evaluated (NIDA, 1999).

At intake, clients should be tested for communicable diseases (e.g., HIV/AIDS, tuberculosis, and Hepatitis B and C), which are significantly more prevalent among people who use drugs (NIDA, 2006a). If they test positive, clients should be counseled on treatment options and the importance of avoiding behaviors that can spread infections to others. If they test negative, clients should be counseled on ways to prevent infection through safer sex and drug-use practices (so-called harm reduction strategies) as they strive for recovery.

Following assessment, clients' problems and needs should be matched to treatment settings and strategies (NIDA, 2006a). Addicts who openly acknowledge their drug problems and commit fully to the recovery process can benefit greatly from drug treatment and adjunctive social and medical services (Simpson, 1998b). Repeated, unfavorable consequences from substance abuse can lead addicts to realize that professional interventions are necessary to achieve sobriety (Hoffman & Fromeke, 2007). Thus, addicts with extensive drug use and criminal histories are often amenable to treatment (Anglin et al., 1996).

Clients in the early stages of drug use can also be excellent candidates for drug treatment programs (Center for Substance Abuse Treatment, 1994). With the implementation of proper assessment and treatment-matching techniques, most persons with substance use disorders can be helped by treatment at any juncture in their addiction careers. The old adage that drug abusers must "hit rock bottom" before they can begin recovery is supported by neither research nor clinical experience (Hoffman & Fromeke, 2007).

13.2 Availability and length of participation

The second principle is that effective treatment takes time and must be highly accessible and readily available to take advantage of addicts' readiness for change (NIDA, 2006a). People with substance use disorders can lose their interest and willingness to enter treatment when they languish on waiting lists for services. Drug users must break through their denial and

hesitancy and become motivated in the early stages of the recovery process, paving the way for long-term care (Anglin et al., 1996). Motivational interviewing techniques can be quite effective in encouraging engagement in the initial phases of treatment (NIDA, 2006a).

Treatment takes time. Addiction is an intractable disease and cannot be overcome with brief interventions. Hence, the goal of treatment should be the management of addiction, not its cure. Many studies show that the length of stay in treatment is positively related to outcomes (De Leon, 1991; Simpson, 1979, 1998a; Simpson, Joe, Lehman, & Sells, 1986). However, clients frequently leave drug treatment prematurely; therefore, different strategies must be used to engage and retain addicts in services long enough for them to gain therapeutic benefit from their participation. The threshold for achieving significant improvement in treatment is generally reached in three months, and several episodes of treatment, aftercare, and relapse are expected before abstinence is attained (Gendreau, 1996; Wexler, Falkin, Lipton, & Rosenblum, 1992).

Fletcher, Tims, and Brown (1997) observed that the "association between treatment duration and outcomes is strong enough to warrant research simply to improve retention." Furthermore, they stated that "time itself is a surrogate measure that might represent, for example, motivation, willingness to adhere to treatment, a process of behavioral change, or the ability of the practitioner to engage the patient" (p. 223). Therefore, favorable treatment outcomes depend not only on time spent in treatment but also on what happens during treatment to change clients' behaviors (Anglin et al., 1996). Recovery is a nonlinear process. Addicts learn to eschew old patterns of thinking (e.g., criminogenic attitudes and beliefs) and behaving and to replace them with new problem-solving skills for reducing cravings, avoiding relapse triggers (i.e., places, persons, and paraphernalia that remind the addict of drug use), and re-establishing healthy interpersonal relationships. Recovery involves steady progress toward a responsible, abstinent, and productive life (NIDA, 2006a).

13.3 Treatment structure and coercion

The third principle is that treatment should be both highly structured and adaptable, involving medical detoxification for persons with a substance dependence disorder and a contingency management component for all clients. Detoxification safely alleviates the acute physical symptoms of withdrawal and is a necessary (but not sufficient) precursor to successful drug treatment. Under a physician's care, detoxification is conducted in a hospital or residential setting and lasts from three to five days (Hoffman & Fromeke, 2007; NIDA, 2006a). After a client becomes stabilized through detoxification, progressive incentives can be incorporated into treatment. Different types of contingency contracts include positive and negative reinforcements to encourage addicts to remain drug free and engaged in the therapeutic process (Onken, Blain, & Boren, 1997). Voucher-based incentives can be combined with non-monetary rewards, such as verbal recognition, reward ceremonies, and certificates of completion (NIDA, 2006a).

Graduated sanctions should be leveled against participants who do not adhere to program regulations, and rewards should be given to those who do. To be most effective, positive and negative sanctions must be clearly specified, explicitly tied to behaviors, and swiftly administered (NIDA, 2006a). They should also be progressive and commensurate with the severity of clients' rule breaking or their degree of improvement. Clients should be monitored throughout treatment to overcome their struggles to identify and avoid the triggers for relapse. The continued use of drugs should be tracked through urinalysis or other objective drug tests (NIDA, 2006a).

Treatment success depends on the adaptability of services in meeting addicts' changing life circumstances (McLellan, Arndt, Metzger, Woody, & O'Brien, 1993). Interventions are most effective when they are responsive to addicts' evolving needs at different points in the recovery process (Anglin et al., 1996). Treatment and service plans should be continually renewed and modified throughout recovery. They must always be sensitive and responsive to differences in clients' age, gender, race, ethnicity, and sexual orientation. Practitioners should be skilled at combining several modalities, including medication, individual and group psychotherapy, family interventions, childcare assistance, and legal services.

Medications, such as methadone, LAAM, Naltrexone, and bupropion, can be essential aspects of care, especially when administered with psychotherapy and other supportive interventions (NIDA, 2006a). In addition, "self help can complement and extend the effects of professional treatment" (NIDA, 2006a, p. 20). Self-help interventions include 12-step programs (e.g., Alcoholics Anonymous, Narcotics Anonymous, and Cocaine Anonymous) (NIDA, 2006a).

Drug treatment programs must be flexible in their responses to relapses—expected, not exceptional, setbacks on the pathway to sobriety. Relapses can occur even after prolonged periods of abstinence, although addicts are most vulnerable to relapse in the first three to six months after treatment (Hoffman & Fromeke, 2007; NIDA, 2006a). Occasional drug use by participants, which minimally disrupts the recovery process, should be handled immediately through placement in detoxification, exposure to graduated sanctions, or return to a higher level of care. As a rule, one or two minor relapses should not result in participants being summarily dropped from drug treatment programs as the termination of treatment after relapse is ill-advised, unjustified, and unethical from a medical standpoint (Hoffman & Fromeke, 2007).

Addicts who are coerced into drug treatment by legal mandates are just as successful in recovery as those who enter treatment programs voluntarily, and legally coerced participants typically remain in treatment programs longer (Anglin et al., 1990). Whenever possible, legal mandates should be used to order offenders to participate in drug treatment programs and to hold them accountable for their progress in recovery (NIDA, 2006a). Coercion involves entering and complying with drug treatment or facing legal consequences. Participation is mandatory and noncompliance can result in sanctions, such as incarceration, the loss of child custody rights, or more stringent conditions of community supervision. Coerced treatment can be mandated at various stages of the criminal justice process and imposed with varying degrees of restrictiveness. Judges can offer a defendant the choice between treatment and incarceration. Probation officers can recommend and enforce treatment as a court-ordered condition of probation. Prison administrators can place inmates involuntarily into drug treatment programs (Lurigio, 2002).

A willingness to enter treatment is not a prerequisite for success (Hoffman & Fromeke, 2007). Legal coercion compels addicts make decisions that they might not be able to make on their own. Coercion is leverage that keeps addicted offenders in treatment long enough to benefit from the positive effects of a supportive therapeutic experience and become intrinsically motivated to remain and succeed in care. In short, coerced treatment provides services for addicts that would otherwise have been unavailable to them (Lurigio, 2002).

13.4 Evidence-based treatment

The fourth principle is that drug treatment must be evidence-based (science-validated) and implemented in accordance with proven models of recovery (Hoffman & Fromeke, 2007).

Evidence-based practices are never grounded in a drug treatment agency's traditions or the experiences or preferences of its staff; instead, they are supported by independent research that demonstrates their effectiveness in achieving outcomes that are broadly endorsed by experts and practitioners in the addiction field (Lurigio, 2006). As Brady states in Hoffman and Fromeke (2007, p. 135), "Evidence-based treatment is treatment that has been proven to work through rigorous scientific studies. Evidence-based treatment is particularly important in the addictions field because many myths and personal biases have infiltrated the treatment area and are often accepted without question."

The most compelling evidence of a program's effectiveness emerges from research that includes representative samples of participants, random assignment to treatment and control groups, and baseline and follow-up measures of client performance that are valid (accurate) and reliable (consistent). Moreover, the most useful results of studies—for the purpose of establishing evidence-based practices—are based on evaluations of programs that are manualized and implemented by trained, credentialed, and experienced staff persons. Practitioners must implement treatment protocols carefully and consistently, and participate regularly in professional development activities (Lurigio, 2006). Evidence-based drug treatment services include: relapse prevention therapy, supportive-expressive psychotherapy, individualized drug counseling, motivational enhancement therapy, multidimensional family therapy for adolescents, and the matrix model (NIDA 2006b).

13.5 Network of services

The fifth principle is that people with substance use problems should receive services that address their other difficulties (NIDA, 2006a). Drug abusers tend to suffer from a variety of psychological, medical, and social problems as well as deficits in education, employment, and housing (Swartz & Lurigio, 1999). Many of these problems persist throughout the recovery process (McLellan, et al., 1981). Drug treatment practitioners should collaborate with other service providers (e.g., psychiatrists and psychologists, vocational training experts, and housing advocates) in addressing the multifaceted problems of drug addicts, especially those with comorbid psychiatric disorders who need integrated substance use and psychiatric treatment services. Addicts must be treated comprehensively; their various problems should be addressed simultaneously, not sequentially (Waller & Weiner, 1989).

13.6 Continuity of care

The sixth principle is that residential (short- or long-term) treatment must be followed by a continuum of care, namely, intensive outpatient treatment, aftercare, and relapse prevention services. Seamless interventions are instrumental in achieving sobriety (NIDA, 2006a; Russell, 1994). As mentioned throughout this chapter, drug abuse and dependence disorders are chronic, and several cycles of treatment and aftercare services—often "with a cumulative impact"—are required to minimize relapses and sustain recovery (NIDA, 1999, p. 16). If drug abusers remain in intensive treatment for at least 90 days and receive continuous care after treatment, they are more likely to attain sobriety, get a job, and stop committing crimes (NIDA, 2006b).

Continuity of care is particularly crucial to the recovery of drug-involved offenders leaving correctional settings (NIDA, 1999; Peters, 1993). Offenders who complete structured drug treatment programs in jails or prisons should be assisted in their transition to community-based services by engaging in prerelease planning and programming activities. Without

aftercare services (i.e., continuity of care), the gains that offenders make in prison or jail treatment programs are frequently diminished or lost altogether (Lipton, 1995; NIDA, 2006a).

Prison inmates who participated in a drug treatment program with follow-up services in work release centers demonstrated significantly lower drug use and recidivism rates than those who participated in institutional treatment only (Inciardi, 1998). Similarly, offenders participating in both prison- and community-based treatment programs were less likely to commit subsequent crimes than offenders who participated in drug treatment without follow-up care (Wexler, 1996; Wexler, De Leon, Thomas, Kressel, & Peters, 1999).

Numerous obstacles can impede the delivery of aftercare services, including the fragmented nature of the criminal justice system, the lack of coordination between criminal justice practitioners and treatment providers, and the absence of incentives and sanctions for offenders to remain drug free after unsupervised release from jails and prisons. The paucity of community treatment programs and treatment providers' inexperience with offenders are also impediments to recovery (Field, 1998). Relapse prevention services for offenders should be more thoroughly studied and understood (Vigdal, 1995) as suggested by the following under-investigated and unresolved issues:

- Reasons why offenders are especially vulnerable to relapse, including stressors related to release from correctional facilities and psychosocial factors related to crime and drug use;
- The evolving recovery process at its various stages;
- The destabilized and stabilized relapse-prone individual;
- Methods to overcome recovery plateaus;
- Basic components of relapse prevention therapy (e.g., self-knowledge and identification of warning signs, coping skills and management of warning signs, and involvement of family members and others in the relapse prevention plan; and
- The timing of relapse prevention efforts, particularly in advance of release from jail and prison.

13.7 Service coordination

The seventh principle is that drug treatment programs for offenders work best when criminal justice professionals (e.g., probation, parole, and detention officers) and service providers communicate with one another and coordinate their efforts (NIDA, 2006a). Cross-training can help both groups understand the competencies and limitations of the other and work more effectively as a case management team. As stated in NIDA (2006a), "The coordination of drug abuse treatment with correctional planning can encourage participation in drug abuse treatment and can help treatment providers incorporate correctional requirements as treatment goals." (p. 3)

Treatment Alternatives for Safe Communities (TASC) was the culmination of a federal effort to establish and promote coordination between criminal justice agencies and treatment providers at the local level. Seeded in 1972 with funding from the Law Enforcement and Assistance Administration, TASC's first pilot program was implemented in Wilmington, Delaware. By 2007, more than 220 TASC programs were operating in 30 states. TASC identifies, assesses, and refers offenders at the pretrial and post-adjudication levels to treatment and adjunctive services. TASC monitors clients' treatment progress through case management, urine testing, and other techniques, and reports violations of the conditions of release to the court.

Case managers establish linkages between treatment providers and correctional staff in order to develop coordinated strategies that hold offenders accountable and protect community safety (Anglin et al., 1996; Inciardi & McBride, 1991; Swartz, 1993; Weinman, 1990). The critical elements of TASC operations include “a process to coordinate justice, treatment, and other systems; procedures for providing information and cross-training to justice, treatment, and other systems; policies and procedures for regular staff training; clearly defined client eligibility criteria; and performance of client-centered case management” (National TASC, 2007).

13.8 Program evaluation

The eighth principle is that drug treatment programs should be routinely examined by outside evaluators to determine whether services are being implemented as planned (treatment fidelity) and to measure the overall impact of services (treatment effectiveness). Process evaluations should provide program staff members with real-time information that can be used to improve service delivery and preserve treatment integrity. Outcome evaluations should be based on internally valid research designs that incorporate random assignment and control groups; such designs yield data that permit confident conclusions about program effectiveness. Researchers should also consider client selection criteria and attrition (i.e., program dropouts) when interpreting results.

Evaluations of program impact must include a variety of outcome measures, such as number and type of drugs used; frequency of drug use; treatment retention; desistance from criminal activities; length of time to relapse and rearrest; vocational skills; employment; social, psychological, and family functioning; reliance on social service agencies; physical and emotional health; HIV risk behaviors; and mortality rates (Anglin & Hser, 1990; Swartz, 1993; Vigdal, 1995). Finally, researchers should test different treatment modalities to ascertain which approaches work best with which groups of clients; they should also employ longitudinal and nested research designs to understand more precisely the effectiveness of interventions as well as the trajectories of participants' addiction and criminal careers (Leukefeld & Tims, 1992).

14. Conclusions

The use of illicit substances is common in the United States. The casual use of drugs can escalate to misuse, abuse, and dependence, resulting in distress and impairment in functioning as well as hardship for users' families and the larger community. The criteria for rendering a clinical diagnosis of drug abuse and dependence are enumerated in the 4th Edition of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-IV-TR). These criteria help diagnosticians in evaluating the nature and severity of substance use disorders. Although substance use disorders produce serious harm for those affiliated with such problems, they are considered treatable conditions. Many studies have demonstrated the effectiveness of drug treatment in leading to recovery. Substance use changes brain chemistry and functioning; therefore addiction is a chronic disease that requires a life-long commitment to achieve long-term sobriety.

Since the War on Drugs was declared 40 years ago, people arrested for drug crimes have been the fastest-growing subpopulations at every step in the criminal justice process from arrest to post-incarcerative release from prison. The criminal justice system often provides

the first and only opportunity for criminally involved drugs users to obtain substance abuse treatment and other recovery services. NIDA has discussed several principles of effective care for drug-involved members of the general and correctional populations, including assessment, treatment matching, relapse prevention, the use of medications and adjunctive services, and the evaluation of services to identify evidence-based practices.

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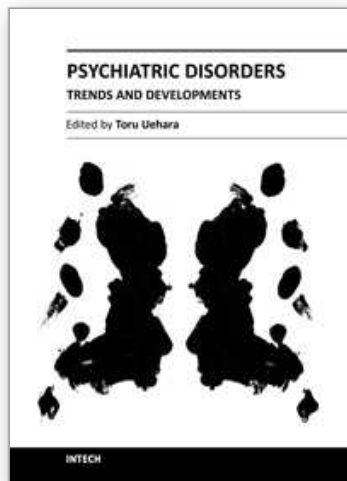
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Due to their prevalence, pervasiveness and burden inflicted on men and women of today, psychiatric disorders are considered as one of the most important, severe and painful illnesses. This impairment of cognitive, emotional, or behavioural functioning is in some cases tragic. Aside from knowing the physical organic factors, such as infections, endocrinal illnesses or head injuries, the aetiology of psychiatric disorders has remained a mystery. However, recent advances in psychiatry and neuroscience have been successful in discovering subsequent pathophysiology and reaching associated bio-psycho-social factors. This book consists of recent trends and developments in psychiatry from all over the world, presented in the form of multifarious and comprehensive articles. The first two sections of the book are reserved for articles on schizophrenia and depression, two major illnesses present in this field. The third section of the book is reserved for addiction psychiatry, related not only to socio-cultural but also biological alterations. The last section of the book, titled Biological Neuropsychiatry, consists of three topics - updated molecular biology, fundamental neuroscience and clinical neuropsychiatric conditions. Doubtlessly, this book will be fruitful for future developments and collaboration in world psychiatry.

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