

PRINCIPLES OF DRUG ADDICTION TREATMENT

A RESEARCH-BASED GUIDE

SECOND EDITION

National Institute on Drug Abuse
National Institutes of Health
U.S. Department of Health and Human Services

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DRUG ADDICTION IS A COMPLEX ILLNESS. It is characterized by intense and, at times, uncontrollable drug craving, along with compulsive drug seeking and use that persist even in the face of devastating consequences.

Many people do not realize that addiction is a brain disease. While the path to drug addiction begins with the act of taking drugs, over time a person's ability to choose not to do so becomes compromised, and seeking and consuming the drug becomes compulsive. This behavior results largely from the effects of prolonged drug exposure on brain functioning. Addiction affects multiple brain circuits, including those involved in reward and motivation, learning and memory, and inhibitory control over behavior. Some individuals are more vulnerable than others to becoming addicted, depending on genetic makeup, age of exposure to drugs, other environmental influences, and the interplay of all these factors.

Addiction is often more than just compulsive drug taking—it can also produce far-reaching consequences. For example, drug abuse and addiction increase a person's risk for a variety of other mental and physical illnesses related to a drug-abusing lifestyle or the toxic effects of the drugs themselves. Additionally, a wide range of dysfunctional behaviors can result from drug abuse and interfere with normal functioning in the family, the workplace, and the broader community.

Because drug abuse and addiction have so many dimensions and disrupt so many aspects of an individual's life, treatment is not simple. Effective treatment programs typically incorporate many components, each directed to a particular aspect of the illness and its consequences. Addiction treatment must help the individual stop using drugs, maintain a drug-free lifestyle, and achieve productive functioning in the family, at work, and in society. Because addiction is a disease, people cannot

simply stop using drugs for a few days and be cured. Most patients require long-term or repeated episodes of care to achieve the ultimate goal of sustained abstinence and recovery of their lives.

Indeed, scientific research and clinical practice demonstrate the value of continuing care in treating addiction, with a variety of approaches having been tested and integrated in residential and community settings. As we look toward the future, we will harness new research results on the influence of genetics and environment on gene function and expression (i.e., epigenetics), which are heralding the development of personalized treatment interventions. These findings will be integrated with current evidence supporting the most effective drug abuse and addiction treatments and their implementation, which are reflected in this guide.

This update of the National Institute on Drug Abuse's *Principles of Drug Addiction Treatment* is intended to address addiction to a wide variety of drugs, including nicotine, alcohol, and illicit and prescription drugs. It is designed to serve as a resource for health care providers, family members, and other stakeholders trying to address the myriad problems faced by patients in need of treatment for drug abuse or addiction.

Nora D. Volkow, M.D.
Director
National Institute on Drug Abuse

*Three decades of scientific research
and clinical practice have yielded
a variety of effective approaches to
drug addiction treatment.*



PRINCIPLES OF EFFECTIVE TREATMENT

- 1. ADDICTION IS A COMPLEX BUT TREATABLE DISEASE THAT AFFECTS BRAIN FUNCTION AND BEHAVIOR.** Drugs of abuse alter the brain's structure and function, resulting in changes that persist long after drug use has ceased. This may explain why drug abusers are at risk for relapse even after long periods of abstinence and despite the potentially devastating consequences.
- 2. NO SINGLE TREATMENT IS APPROPRIATE FOR EVERYONE.** Matching treatment settings, interventions, and services to an individual's particular problems and needs is critical to his or her ultimate success in returning to productive functioning in the family, workplace, and society.
- 3. TREATMENT NEEDS TO BE READILY AVAILABLE.** Because drug-addicted individuals may be uncertain about entering treatment, taking advantage of available services the moment people are ready for treatment is critical. Potential patients can be lost if treatment is not immediately available or readily accessible. As with other chronic diseases, the earlier treatment is offered in the disease process, the greater the likelihood of positive outcomes.
- 4. EFFECTIVE TREATMENT ATTENDS TO MULTIPLE NEEDS OF THE INDIVIDUAL, NOT JUST HIS OR HER DRUG ABUSE.** To be effective, treatment must address the individual's drug abuse and any associated medical, psychological, social, vocational, and legal problems. It is also important that treatment be appropriate to the individual's age, gender, ethnicity, and culture.
- 5. REMAINING IN TREATMENT FOR AN ADEQUATE PERIOD OF TIME IS CRITICAL.** The appropriate duration for an individual depends on the type and degree of his or her problems and needs. Research indicates that most addicted individuals need at least 3 months in treatment to significantly reduce or stop their drug use

and that the best outcomes occur with longer durations of treatment. Recovery from drug addiction is a long-term process and frequently requires multiple episodes of treatment. As with other chronic illnesses, relapses to drug abuse can occur and should signal a need for treatment to be reinstated or adjusted. Because individuals often leave treatment prematurely, programs should include strategies to engage and keep patients in treatment.

- 6. COUNSELING—INDIVIDUAL AND/OR GROUP—AND OTHER BEHAVIORAL THERAPIES ARE THE MOST COMMONLY USED FORMS OF DRUG ABUSE TREATMENT.** Behavioral therapies vary in their focus and may involve addressing a patient’s motivation to change, providing incentives for abstinence, building skills to resist drug use, replacing drug-using activities with constructive and rewarding activities, improving problemsolving skills, and facilitating better interpersonal relationships. Also, participation in group therapy and other peer support programs during and following treatment can help maintain abstinence.
- 7. MEDICATIONS ARE AN IMPORTANT ELEMENT OF TREATMENT FOR MANY PATIENTS, ESPECIALLY WHEN COMBINED WITH COUNSELING AND OTHER BEHAVIORAL THERAPIES.** For example, methadone and buprenorphine are effective in helping individuals addicted to heroin or other opioids stabilize their lives and reduce their illicit drug use. Naltrexone is also an effective medication for some opioid-addicted individuals and some patients with alcohol dependence. Other medications for alcohol dependence include acamprosate, disulfiram, and topiramate. For persons addicted to nicotine, a nicotine replacement product (such as patches, gum, or lozenges) or an oral medication (such as bupropion or varenicline) can be an effective component of treatment when part of a comprehensive behavioral treatment program.

- 8. AN INDIVIDUAL'S TREATMENT AND SERVICES PLAN MUST BE ASSESSED CONTINUALLY AND MODIFIED AS NECESSARY TO ENSURE THAT IT MEETS HIS OR HER CHANGING NEEDS.**

A patient may require varying combinations of services and treatment components during the course of treatment and recovery. In addition to counseling or psychotherapy, a patient may require medication, medical services, family therapy, parenting instruction, vocational rehabilitation, and/or social and legal services. For many patients, a continuing care approach provides the best results, with the treatment intensity varying according to a person's changing needs.

- 9. MANY DRUG-ADDICTED INDIVIDUALS ALSO HAVE OTHER MENTAL DISORDERS.** Because drug abuse and addiction—both of which are mental disorders—often co-occur with other mental illnesses, patients presenting with one condition should be assessed for the other(s). And when these problems co-occur, treatment should address both (or all), including the use of medications as appropriate.

- 10. MEDICALLY ASSISTED DETOXIFICATION IS ONLY THE FIRST STAGE OF ADDICTION TREATMENT AND BY ITSELF DOES LITTLE TO CHANGE LONG-TERM DRUG ABUSE.** Although medically assisted detoxification can safely manage the acute physical symptoms of withdrawal and, for some, can pave the way for effective long-term addiction treatment, detoxification alone is rarely sufficient to help addicted individuals achieve long-term abstinence. Thus, patients should be encouraged to continue drug treatment following detoxification. Motivational enhancement and incentive strategies, begun at initial patient intake, can improve treatment engagement.

- 1 1 . T R E A T M E N T D O E S N O T N E E D T O B E V O L U N T A R Y T O B E E F F E C T I V E .** Sanctions or enticements from family, employment settings, and/or the criminal justice system can significantly increase treatment entry, retention rates, and the ultimate success of drug treatment interventions.
- 1 2 . D R U G U S E D U R I N G T R E A T M E N T M U S T B E M O N I T O R E D C O N T I N U O U S L Y , A S L A P S E S D U R I N G T R E A T M E N T D O O C C U R .** Knowing their drug use is being monitored can be a powerful incentive for patients and can help them withstand urges to use drugs. Monitoring also provides an early indication of a return to drug use, signaling a possible need to adjust an individual's treatment plan to better meet his or her needs.
- 1 3 . T R E A T M E N T P R O G R A M S S H O U L D A S S E S S P A T I E N T S F O R T H E P R E S E N C E O F H I V / A I D S , H E P A T I T I S B A N D C , T U B E R C U L O S I S , A N D O T H E R I N F E C T I O U S D I S E A S E S A S W E L L A S P R O V I D E T A R G E T E D R I S K - R E D U C T I O N C O U N S E L I N G T O H E L P P A T I E N T S M O D I F Y O R C H A N G E B E H A V I O R S T H A T P L A C E T H E M A T R I S K O F C O N T R A C T I N G O R S P R E A D I N G I N F E C T I O U S D I S E A S E S .** Typically, drug abuse treatment addresses some of the drug-related behaviors that put people at risk of infectious diseases. Targeted counseling specifically focused on reducing infectious disease risk can help patients further reduce or avoid substance-related and other high-risk behaviors. Counseling can also help those who are already infected to manage their illness. Moreover, engaging in substance abuse treatment can facilitate adherence to other medical treatments. Patients may be reluctant to accept screening for HIV (and other infectious diseases); therefore, it is incumbent upon treatment providers to encourage and support HIV screening and inform patients that highly active antiretroviral therapy (HAART) has proven effective in combating HIV, including among drug-abusing populations.

Treatment varies depending on the type of drug and the characteristics of the patient. The best programs provide a combination of therapies and other services.



FREQUENTLY ASKED QUESTIONS

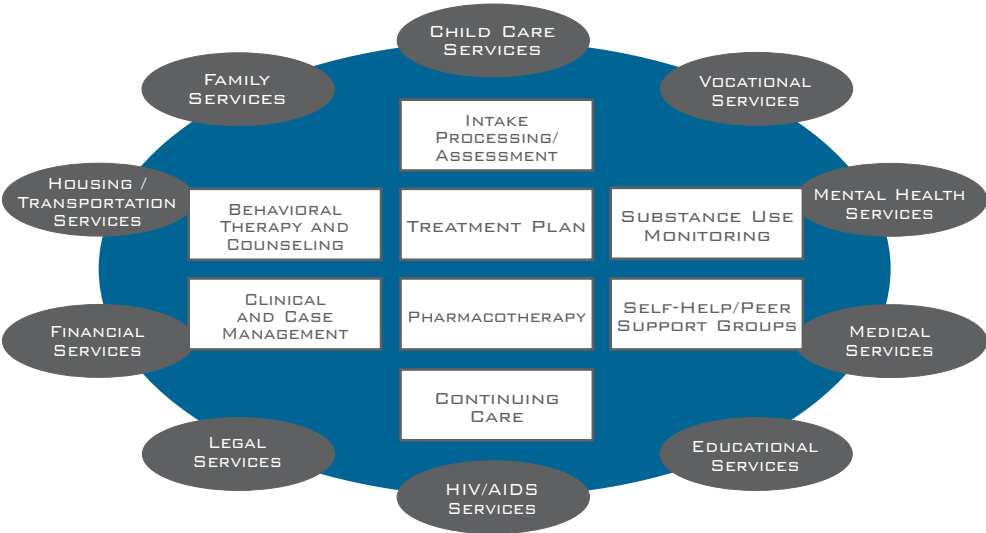
1. WHY DO DRUG-ADDICTED PERSONS KEEP USING DRUGS?

Nearly all addicted individuals believe at the outset that they can stop using drugs on their own, and most try to stop without treatment. Although some people are successful, many attempts result in failure to achieve long-term abstinence. Research has shown that long-term drug abuse results in changes in the brain that persist long after a person stops using drugs. These drug-induced changes in brain function can have many behavioral consequences, including an inability to exert control over the impulse to use drugs despite adverse consequences—the defining characteristic of addiction.

LONG-TERM DRUG USE RESULTS IN SIGNIFICANT CHANGES IN BRAIN FUNCTION THAT CAN PERSIST LONG AFTER THE INDIVIDUAL STOPS USING DRUGS.

Understanding that addiction has such a fundamental biological component may help explain the difficulty of achieving and maintaining abstinence without treatment. Psychological stress from work, family problems, psychiatric illness, pain associated with medical problems, social cues (such as meeting individuals from one's drug-using past), or environmental cues (such as encountering streets, objects, or even smells associated with drug abuse) can trigger intense cravings without the individual even being consciously aware of the triggering event. Any one of these factors can hinder attainment of sustained abstinence and make relapse more likely. Nevertheless, research indicates that active participation in treatment is an essential component for good outcomes and can benefit even the most severely addicted individuals.

Components of Comprehensive Drug Abuse Treatment



The best treatment programs provide a combination of therapies and other services to meet the needs of the individual patient.

2. WHAT IS DRUG ADDICTION TREATMENT?

Drug treatment is intended to help addicted individuals stop compulsive drug seeking and use. Treatment can occur in a variety of settings, in many different forms, and for different lengths of time. Because drug addiction is typically a chronic disorder characterized by occasional relapses, a short-term, one-time treatment is usually not sufficient. For many, treatment is a long-term process that involves multiple interventions and regular monitoring.

There are a variety of evidence-based approaches to treating addiction. Drug treatment can include behavioral therapy (such as individual or group counseling, cognitive therapy, or contingency management), medications, or their combination. The specific type of treatment or combination of treatments will vary depending on the

patient's individual needs and, often, on the types of drugs they use. The severity of addiction and previous efforts to stop using drugs can also influence a treatment approach. Finally, people who are addicted to drugs often suffer from other health (including other mental health), occupational, legal, familial, and social problems that should be addressed concurrently.

The best programs provide a combination of therapies and other services to meet an individual patient's needs. Specific needs may relate to age, race, culture, sexual orientation, gender, pregnancy, other drug use, comorbid conditions (e.g., depression, HIV), parenting, housing, and employment, as well as physical and sexual abuse history.

DRUG ADDICTION TREATMENT CAN INCLUDE MEDICATIONS, BEHAVIORAL THERAPIES, OR THEIR COMBINATION.

Treatment medications, such as methadone, buprenorphine, and naltrexone, are available for individuals addicted to opioids, while nicotine preparations (patches, gum, lozenges, and nasal spray) and the medications varenicline and bupropion are available for individuals addicted to tobacco. Disulfiram, acamprosate, naltrexone, and topiramate are medications used for treating alcohol dependence, which commonly co-occurs with other drug addictions. In fact, most people with severe addiction are polydrug users and require treatment for all substances abused. Even combined alcohol and tobacco use has proven amenable to concurrent treatment for both substances.

Psychoactive medications, such as antidepressants, anti-anxiety agents, mood stabilizers, and antipsychotic medications, may be critical for treatment success when patients have co-occurring mental disorders, such as depression, anxiety disorders (including post-traumatic stress disorder), bipolar disorder, or schizophrenia.

Behavioral therapies can help motivate people to participate in drug treatment; offer strategies for coping with drug cravings; teach ways to avoid drugs and prevent relapse; and help individuals deal with relapse if it occurs. Behavioral therapies can also help people improve communication, relationship, and parenting skills, as well as family dynamics.

Many treatment programs employ both individual and group therapies. Group therapy can provide social reinforcement and help enforce behavioral contingencies that promote abstinence and a non-drug-using lifestyle. Some of the more established behavioral treatments, such as contingency management and cognitive-behavioral therapy, are also being adapted for group settings to improve efficiency and cost-effectiveness. However, particularly in adolescents, there can also be a danger of iatrogenic, or inadvertent, effects of group treatment; thus, trained counselors should be aware and monitor for such effects.

Because they work on different aspects of addiction, combinations of behavioral therapies and medications (when available) generally appear to be more effective than either approach used alone.

TREATMENT FOR DRUG ABUSE AND ADDICTION IS DELIVERED IN MANY DIFFERENT SETTINGS USING A VARIETY OF BEHAVIORAL AND PHARMACOLOGICAL APPROACHES.

COMPARISON OF RELAPSE RATES BETWEEN DRUG ADDICTION AND OTHER CHRONIC ILLNESSES

Percentage of Patients Who Relapse

TYPE 1 DIABETES

30 TO 50%

DRUG ADDICTION

40 TO 60%

HYPERTENSION

50 TO 70%

ASTHMA

50 TO 70%

3. HOW EFFECTIVE IS DRUG ADDICTION TREATMENT?

In addition to stopping drug abuse, the goal of treatment is to return people to productive functioning in the family, workplace, and community. According to research that tracks individuals in treatment over extended periods, most people who get into and remain in treatment stop using drugs, decrease their criminal activity, and improve their occupational, social, and psychological functioning. For example, methadone treatment has been shown to increase participation in behavioral therapy and decrease both drug use and criminal behavior. However, individual treatment outcomes depend on the extent and nature of the patient's problems, the appropriateness of treatment and related services used to address those problems, and the quality of interaction between the patient and his or her treatment providers.

RELAPSE RATES FOR ADDICTION RESEMBLE THOSE OF OTHER CHRONIC DISEASES SUCH AS DIABETES, HYPERTENSION, AND ASTHMA.

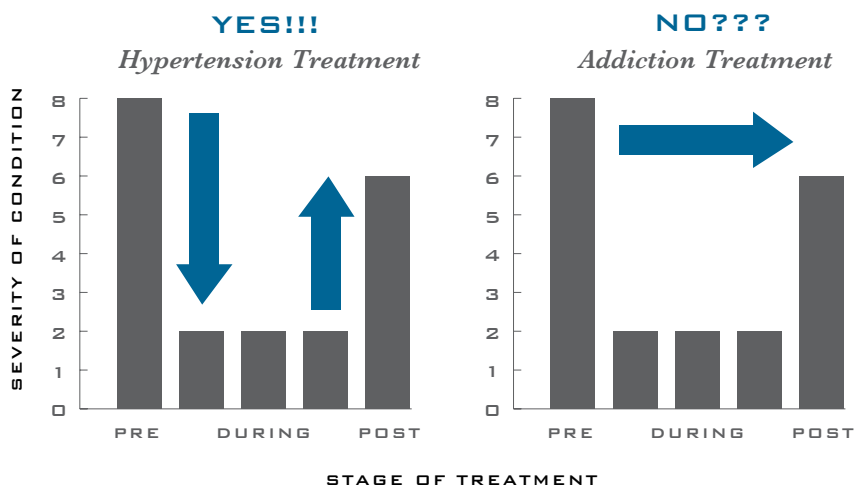
Like other chronic diseases, addiction can be managed successfully. Treatment enables people to counteract addiction's powerful disruptive effects on the brain and behavior and to regain control of their lives. The chronic nature of the disease means that relapsing to drug abuse is not only possible but also likely, with relapse rates similar to those for other well-characterized chronic medical illnesses—such as diabetes, hypertension, and asthma (see figure, “Comparison of Relapse Rates Between Drug Addiction and Other Chronic Illnesses”)—that also have both physiological and behavioral components.

Unfortunately, when relapse occurs many deem treatment a failure. This is not the case: successful treatment for addiction typically requires continual evaluation and modification as appropriate, similar to the approach taken for other chronic diseases. For example, when a patient is receiving active treatment for hypertension and symptoms decrease, treatment is deemed successful, even though symptoms may recur when treatment is discontinued. For the addicted patient, lapses to drug abuse do not indicate failure—rather, they signify that treatment needs to be reinstated or adjusted, or that alternate treatment is needed (see figure, “How Do We Evaluate if a Treatment is Effective?”).

4. IS DRUG ADDICTION TREATMENT WORTH ITS COST?

Substance abuse costs our Nation over one half-trillion dollars annually, and treatment can help reduce these costs. Drug addiction treatment has been shown to reduce associated health and social costs by far more than the cost of the treatment itself. Treatment is also much less

HOW DO WE EVALUATE IF A TREATMENT IS EFFECTIVE?



expensive than its alternatives, such as incarcerating addicted persons. For example, the average cost for 1 full year of methadone maintenance treatment is approximately \$4,700 per patient, whereas 1 full year of imprisonment costs approximately \$24,000 per person.

DRUG ADDICTION TREATMENT REDUCES DRUG USE AND ITS ASSOCIATED HEALTH AND SOCIAL COSTS.

According to several conservative estimates, every \$1 invested in addiction treatment programs yields a return of between \$4 and \$7 in reduced drug-related crime, criminal justice costs, and theft. When savings related to health care are included, total savings can exceed costs by a ratio of 12 to 1. Major savings to the individual and to society also stem from fewer interpersonal conflicts; greater workplace productivity; and fewer drug-related accidents, including overdoses and deaths.

5. HOW LONG DOES DRUG ADDICTION TREATMENT USUALLY LAST?

Individuals progress through drug addiction treatment at various rates, so there is no predetermined length of treatment. However, research has shown unequivocally that good outcomes are contingent on adequate treatment length. Generally, for residential or outpatient treatment, participation for less than 90 days is of limited effectiveness, and treatment lasting significantly longer is recommended for maintaining positive outcomes. For methadone maintenance, 12 months is considered the minimum, and some opioid-addicted individuals continue to benefit from methadone maintenance for many years.

GOOD OUTCOMES ARE CONTINGENT ON ADEQUATE TREATMENT LENGTH.

Treatment dropout is one of the major problems encountered by treatment programs; therefore, motivational techniques that can keep patients engaged will also improve outcomes. By viewing addiction as a chronic disease and offering continuing care and monitoring, programs can succeed, but this will often require multiple episodes of treatment and readily readmitting patients that have relapsed.

6. WHAT HELPS PEOPLE STAY IN TREATMENT?

Because successful outcomes often depend on a person's staying in treatment long enough to reap its full benefits, strategies for keeping people in treatment are critical. Whether a patient stays in treatment depends on factors associated with both the individual and the program. Individual factors related to engagement and retention typically include motivation to change drug-using behavior; degree of support from family and friends; and, frequently,

pressure from the criminal justice system, child protection services, employers, or the family. Within a treatment program, successful clinicians can establish a positive, therapeutic relationship with their patients. The clinician should ensure that a treatment plan is developed cooperatively with the person seeking treatment, that the plan is followed, and that treatment expectations are clearly understood. Medical, psychiatric, and social services should also be available.

WHETHER A PATIENT STAYS IN TREATMENT DEPENDS ON FACTORS ASSOCIATED WITH BOTH THE INDIVIDUAL AND THE PROGRAM.

Because some problems (such as serious medical or mental illness or criminal involvement) increase the likelihood of patients dropping out of treatment, intensive interventions may be required to retain them. After a course of intensive treatment, the provider should ensure a transition to less intensive continuing care to support and monitor individuals in their ongoing recovery.

7. HOW DO WE GET MORE SUBSTANCE-ABUSING PEOPLE INTO TREATMENT?

It has been known for many years that the “treatment gap” is massive—that is, among those who need treatment for a substance use disorder, few receive it. In 2007, 23.2 million persons aged 12 or older needed treatment for an illicit drug or alcohol use problem, but only 3.9 million received treatment at a specialty substance abuse facility.

Reducing this gap requires a multipronged approach. Strategies include increasing access to effective treatment, achieving insurance parity (now in its earliest phase of implementation), reducing stigma, and raising awareness among both patients and health care professionals of the value of addiction treatment. To assist physicians in identifying treatment need in their patients and making appropriate referrals, NIDA is encouraging widespread use of screening, brief intervention, and referral to treatment (SBIRT) tools for use in primary care settings. SBIRT—which has proven effective against tobacco and alcohol use—has the potential not only to catch people before serious drug problems develop but also to connect them with appropriate treatment providers.

8. HOW CAN FAMILIES AND FRIENDS MAKE A DIFFERENCE IN THE LIFE OF SOMEONE NEEDING TREATMENT?

Family and friends can play critical roles in motivating individuals with drug problems to enter and stay in treatment. Family therapy can also be important, especially for adolescents. Involvement of a family member or significant other in an individual's treatment program can strengthen and extend treatment benefits.

9. WHERE CAN FAMILY MEMBERS GO FOR INFORMATION ON TREATMENT OPTIONS?

Trying to locate appropriate treatment for a loved one, especially finding a program tailored to an individual's particular needs, can be a difficult process. However, there are some resources currently available to help with this process, including—

- The Substance Abuse and Mental Health Services Administration (SAMHSA) maintains a Web site (www.findtreatment.samhsa.gov) that shows the location of residential, outpatient, and hospital inpatient treatment programs for drug addiction and alcoholism throughout the country. This information is also accessible by calling 1-800-662-HELP.
- The National Suicide Prevention Lifeline (1-800-273-TALK) offers more than just suicide prevention—it can also help with a host of issues, including drug and alcohol abuse, and can connect individuals with a nearby professional.
- The National Alliance on Mental Illness (www.nami.org) and Mental Health America (www.mentalhealthamerica.net) are alliances of nonprofit, self-help support organizations for patients and families dealing with a variety of mental disorders. Both have State and local affiliates throughout the country and may be especially helpful for patients with comorbid conditions.
- The American Academy of Addiction Psychiatry and the American Academy of Child and Adolescent Psychiatry each have physician locator tools posted on their Web sites at www.aaap.org and www.aacap.org, respectively.
- For information about participating in a clinical trial testing promising substance abuse interventions, contact NIDA's National Drug Abuse Treatment Clinical Trials Network at www.drugabuse.gov/CTN/Index.htm, or visit NIH's Web site at www.clinicaltrials.gov.

10. HOW CAN THE WORKPLACE PLAY A ROLE IN SUBSTANCE ABUSE TREATMENT?

Many workplaces sponsor Employee Assistance Programs (EAPs) that offer short-term counseling and/or assistance in linking employees with drug or alcohol problems to local treatment resources, including peer support/recovery groups. In addition, therapeutic work environments that provide employment for drug-abusing individuals who can demonstrate abstinence have been shown not only to promote a continued drug-free lifestyle but also to improve job skills, punctuality, and other behaviors necessary for active employment throughout life. Urine testing facilities, trained personnel, and workplace monitors are needed to implement this type of treatment.

11. WHAT ROLE CAN THE CRIMINAL JUSTICE SYSTEM PLAY IN ADDRESSING DRUG ADDICTION?

Research has demonstrated that treatment for drug-addicted offenders during and after incarceration can have a significant effect on future drug use, criminal behavior, and social functioning. The case for integrating drug addiction treatment approaches with the criminal justice system is compelling. Combining prison- and community-based treatment for addicted offenders reduces the risk of both recidivism to drug-related criminal behavior and relapse to drug use, which, in turn, nets huge savings in societal costs. One study found that prisoners who participated in a therapeutic treatment program in the Delaware State prison system and continued to receive treatment in a work-release program after prison were 70 percent less likely than nonparticipants to return to drug use and incur re-arrest.

INDIVIDUALS WHO ENTER TREATMENT UNDER LEGAL PRESSURE HAVE OUTCOMES AS FAVORABLE AS THOSE WHO ENTER TREATMENT VOLUNTARILY.

The majority of offenders involved with the criminal justice system are not in prison but are under community supervision. For those with known drug problems, drug addiction treatment may be recommended or mandated as a condition of probation. Research has demonstrated that individuals who enter treatment under legal pressure have outcomes as favorable as those who enter treatment voluntarily.

The criminal justice system refers drug offenders into treatment through a variety of mechanisms, such as diverting nonviolent offenders to treatment; stipulating treatment as a condition of incarceration, probation, or pretrial release; and convening specialized courts, or drug courts, that handle drug offense cases. These courts mandate and arrange for treatment as an alternative to incarceration, actively monitor progress in treatment, and arrange for other services for drug-involved offenders.

The most effective models integrate criminal justice and drug treatment systems and services. Treatment and criminal justice personnel work together on treatment planning—including implementation of screening, placement, testing, monitoring, and supervision—as well as on the systematic use of sanctions and rewards. Treatment for incarcerated drug abusers should include continuing care, monitoring, and supervision after incarceration and during parole. (For more information, please see NIDA's *Principles of Drug Abuse Treatment for Criminal Justice Populations: A Research-Based Guide* [revised 2007].)

12. WHAT ARE THE UNIQUE NEEDS OF WOMEN WITH SUBSTANCE USE DISORDERS?

Gender-related drug abuse treatment should attend not only to biological differences but also to social and environmental factors, all of which can influence the motivations for drug use, the reasons for seeking treatment, the types of environments where treatment is obtained, the treatments that are most effective, and the consequences of not receiving treatment. Many life circumstances predominate in women as a group, which may require a specialized treatment approach. For example, research has shown that physical and sexual trauma followed by post-traumatic stress disorder (PTSD) is more common in drug-abusing women than in men seeking treatment. Other factors unique to women that can influence the treatment process include issues around pregnancy and child care, financial independence, and how they come into treatment (as women are more likely to seek the assistance of a general or mental health practitioner).

13. WHAT ARE THE UNIQUE NEEDS OF ADOLESCENTS WITH SUBSTANCE USE DISORDERS?

Adolescent drug abusers have unique needs stemming from their immature neurocognitive and psychosocial stage of development. Research has demonstrated that the brain undergoes a prolonged process of development and refinement, from birth to early adulthood, during which a developmental shift occurs where actions go from more impulsive to more reasoned and reflective. In fact, the brain areas most closely associated with aspects of behavior such as decisionmaking, judgment, planning, and self-control undergo a period of rapid development during adolescence.

Adolescent drug abuse is also often associated with other co-occurring mental health problems. These include attention-deficit hyperactivity disorder (ADHD), oppositional defiant disorder, and conduct problems, as well as depressive and anxiety disorders. This developmental period has also been associated with physical and/or sexual abuse and academic difficulties.

Adolescents are also especially sensitive to social cues, with peer groups and families being highly influential during this time. Therefore, treatments that facilitate positive parental involvement, integrate other systems in which the adolescent participates (such as school and athletics), and recognize the importance of prosocial peer relationships are among the most effective. Access to comprehensive assessment, treatment, case management, and family-support services that are developmentally, culturally, and gender-appropriate is also integral when addressing adolescent addiction.

Medications for substance abuse among adolescents may also be helpful. Currently, the only Food and Drug Administration (FDA)-approved addiction medication for adolescents is the transdermal nicotine patch. Research is under way to determine the safety and efficacy of medications for nicotine-, alcohol-, and opioid-dependent adolescents and for adolescents with co-occurring disorders.

14. ARE THERE SPECIFIC DRUG ADDICTION TREATMENTS FOR OLDER ADULTS?

With the aging of the baby boomer generation, the composition of the general population will expand dramatically with respect to the number of older adults. Such a change, coupled with a greater history of lifetime drug use (than previous older generations), different cultural norms and general attitudes about drug use,

and increases in the availability of psychotherapeutic medications, may lead to growth in the number of older adults with substance use problems. Although no drug treatment programs are yet designed exclusively for older adults, research to date indicates that current addiction treatment programs can be as effective for older adults as they are for younger adults. However, substance abuse problems in older adults often go unrecognized, and therefore untreated.

15. ARE THERE TREATMENTS FOR PEOPLE ADDICTED TO PRESCRIPTION DRUGS?

The nonmedical use of prescription drugs increased dramatically in the 1990s and remains at high levels. In 2007, approximately 7 million people aged 12 or older reported nonmedical use of a prescription drug. The most commonly abused medications are painkillers (i.e., opioids: 5.2 million people), stimulants (e.g., methylphenidate and amphetamine: 1.2 million), and central nervous system (CNS) depressants (e.g., benzodiazepines: 2.1 million). Like many illicit substances, these drugs alter the brain's activity and can lead to many adverse consequences, including addiction. For example, opioid pain relievers, such as Vicodin or OxyContin, can present similar health risks as do illicit opioids (e.g., heroin) depending on dose, route of administration, combination with other drugs, and other factors. As a result, the increases in nonmedical use have been accompanied by increased emergency room visits, accidental poisonings, and treatment admissions for addiction. Treatments for prescription drugs tend to be similar to those for illicit drugs that affect the same brain systems. Thus, buprenorphine is used to treat addiction to opioid pain medications, and behavioral therapies are most likely to be effective for stimulant or CNS depressant addiction—for which we do not yet have medications.

16. IS THERE A DIFFERENCE BETWEEN PHYSICAL DEPENDENCE AND ADDICTION?

Yes. According to the *DSM*, the clinical criteria for “drug dependence” (or what we refer to as addiction) include compulsive drug use despite harmful consequences; inability to stop using a drug; failure to meet work, social, or family obligations; and, sometimes (depending on the drug), tolerance and withdrawal. The latter reflect *physical dependence* in which the body adapts to the drug, requiring more of it to achieve a certain effect (tolerance) and eliciting drug-specific physical or mental symptoms if drug use is abruptly ceased (withdrawal). Physical dependence can happen with the chronic use of many drugs—including even appropriate, medically instructed use. Thus, **physical dependence in and of itself does not constitute addiction**, but often accompanies addiction. This distinction can be difficult to discern, particularly with prescribed pain medications, where the need for increasing dosages can represent tolerance or a worsening underlying problem, as opposed to the beginning of abuse or addiction.

17. CAN A PERSON BECOME ADDICTED TO PSYCHOTHERAPEUTICS THAT ARE PRESCRIBED BY A DOCTOR?

While this scenario occurs infrequently, it is possible. Because some psychotherapeutics have a risk of addiction associated with them (e.g., stimulants to treat ADHD, benzodiazepines to treat anxiety or sleep disorders, and opioids to treat pain), it is important for patients to follow their physician’s instructions faithfully and for physicians to monitor their patients carefully. To minimize these risks, a physician (or other prescribing health provider) should be aware of a patient’s prior or current substance abuse problems, as well as their family history with regard to addiction. This will help determine risk and need for monitoring.

18. HOW DO OTHER MENTAL DISORDERS COEXISTING WITH DRUG ADDICTION AFFECT DRUG ADDICTION TREATMENT?

Drug addiction is a disease of the brain that frequently occurs with other mental disorders. In fact, as many as 6 in 10 people with an illicit substance use disorder also suffer from another mental illness; and rates are similar for users of licit drugs—i.e., tobacco and alcohol. For these individuals, one condition becomes more difficult to treat successfully as an additional condition is intertwined. Thus, patients entering treatment either for a substance use disorder or for another mental disorder should be assessed for the co-occurrence of the other condition. Research indicates that treating both (or multiple) illnesses simultaneously in an integrated fashion is generally the best treatment approach for these patients.

19. IS THE USE OF MEDICATIONS LIKE METHADONE AND BUPRENORPHINE SIMPLY REPLACING ONE DRUG ADDICTION WITH ANOTHER?

No—as used in maintenance treatment, buprenorphine and methadone are not heroin/opioid substitutes. They are prescribed or administered under monitored, controlled conditions and are safe and effective for treating opioid addiction when used as directed. They are administered orally or sublingually (i.e., under the tongue) in specified doses, and their pharmacological effects differ from those of heroin and other abused opioids.

Heroin, for example, is often injected, snorted, or smoked, causing an almost immediate “rush,” or brief period of euphoria, that wears off quickly and ends in a “crash.” The individual then experiences an intense craving to use again so as to stop the crash and reinstate the euphoria.

The cycle of euphoria, crash, and craving—sometimes repeated several times a day—is a hallmark of addiction and results in severe behavioral disruption. These characteristics result from heroin’s rapid onset and short duration of action in the brain.

AS USED IN MAINTENANCE TREATMENT, METHADONE AND BUPRENORPHINE ARE NOT HEROIN/OPIOID SUBSTITUTES.

In contrast, methadone and buprenorphine have gradual onsets of action and produce stable levels of the drug in the brain; as a result, patients maintained on these medications do not experience a rush, while they also markedly reduce their desire to use opioids. If an individual treated with these medications tries to take an opioid such as heroin, the euphoric effects are usually dampened or suppressed. Patients undergoing maintenance treatment do not experience the physiological or behavioral abnormalities from rapid fluctuations in drug levels associated with heroin use. Maintenance treatments save lives—they help to stabilize individuals, allowing treatment of their medical, psychological, and other problems so they can contribute effectively as members of families and of society.

20. WHERE DO 12-STEP OR SELF-HELP PROGRAMS FIT INTO DRUG ADDICTION TREATMENT?

Self-help groups can complement and extend the effects of professional treatment. The most prominent self-help groups are those affiliated with Alcoholics Anonymous (AA), Narcotics Anonymous (NA), and Cocaine Anonymous (CA), all of which are based on the 12-step model. Most drug addiction treatment programs

encourage patients to participate in self-help group therapy during and after formal treatment. These groups can be particularly helpful during recovery, offering an added layer of community-level social support to help people achieve and maintain abstinence and other healthy lifestyle behaviors over the course of a lifetime.

21. CAN EXERCISE PLAY A ROLE IN THE TREATMENT PROCESS?

Yes—exercise is increasingly becoming a component of many treatment programs and has shown efficacy, in combination with cognitive-behavioral therapy, for promoting smoking cessation. Exercise may exert beneficial effects by addressing psychosocial and physiological needs that nicotine replacement alone does not; attenuating negative affect; reducing stress; and helping prevent weight gain following cessation. Research is currently under way to determine if and how exercise programs can play a similar role in the treatment of other forms of drug abuse.

22. HOW DOES DRUG ADDICTION TREATMENT HELP REDUCE THE SPREAD OF HIV/AIDS, HEPATITIS C (HCV), AND OTHER INFECTIOUS DISEASES?

Drug-abusing individuals, including injecting and non-injecting drug users, are at increased risk of HIV, HCV, and other infectious diseases. These diseases are transmitted by sharing contaminated drug injection equipment and by engaging in risky sexual behavior sometimes associated with drug use. Effective drug abuse treatment is HIV/HCV prevention because it reduces associated risk behaviors as well as drug abuse. Counseling that targets a range of HIV/HCV risk behaviors provides an added level of disease prevention.

DRUG ABUSE TREATMENT *IS* HIV AND HCV PREVENTION.

Drug injectors who do not enter treatment are up to six times more likely to become infected with HIV than injectors who enter and remain in treatment because the latter reduce activities that can spread disease, such as sharing injection equipment and engaging in unprotected sexual activity. Participation in treatment also presents opportunities for screening, counseling, and referral to additional services, including early HIV treatment and access to HAART. In fact, HIV counseling and testing are key aspects of superior drug abuse treatment programs and should be offered to all individuals entering treatment. Greater availability of inexpensive and unobtrusive rapid HIV tests should increase access to these important aspects of HIV prevention and treatment.

Treatment for drug abuse and addiction is delivered in many different settings, using a variety of behavioral and pharmacological approaches.



DRUG ADDICTION TREATMENT IN THE UNITED STATES

DRUG ADDICTION IS A COMPLEX DISORDER THAT CAN INVOLVE VIRTUALLY EVERY ASPECT OF AN INDIVIDUAL'S FUNCTIONING: IN THE FAMILY, AT WORK AND SCHOOL, AND IN THE COMMUNITY. Because of addiction's complexity and pervasive consequences, drug addiction treatment typically must involve many components. Some of those components focus directly on the individual's drug use; others, like employment training, focus on restoring the addicted individual to productive membership in the family and society (see diagram on page 8), enabling him or her to experience the rewards associated with abstinence.

Treatment for drug abuse and addiction is delivered in many different settings using a variety of behavioral and pharmacological approaches. In the United States, more than 13,000 specialized drug treatment facilities provide counseling, behavioral therapy, medication, case management, and other types of services to persons with substance use disorders.

Along with specialized drug treatment facilities, drug abuse and addiction are treated in physicians' offices and mental health clinics by a variety of providers, including counselors, physicians, psychiatrists, psychologists, nurses, and social workers. Treatment is delivered in outpatient, inpatient, and residential settings. Although specific treatment approaches often are associated with particular treatment settings, a variety of therapeutic interventions or services can be included in any given setting.

Because drug abuse and addiction are major public health problems, a large portion of drug treatment is funded by local, State, and Federal governments. Private and employer-subsidized health plans also may provide coverage for treatment of addiction and its medical consequences. Unfortunately, managed care has resulted in shorter average stays, while a historical lack of or insufficient coverage for substance abuse treatment has

curtailed the number of operational programs. The recent passage of parity for insurance coverage of mental health and substance abuse problems will hopefully improve this state of affairs.

GENERAL CATEGORIES OF TREATMENT PROGRAMS

Research studies on addiction treatment typically have classified programs into several general types or modalities. Treatment approaches and individual programs continue to evolve and diversify, and many programs today do not fit neatly into traditional drug addiction treatment classifications. Examples of specific research-based treatment components are described on pages 30–35.

DETOXIFICATION AND MEDICALLY MANAGED WITHDRAWAL

Detoxification is the process by which the body clears itself of drugs and is often accompanied by unpleasant and sometimes even fatal side effects caused by withdrawal. As stated previously, detoxification alone does not address the psychological, social, and behavioral problems associated with addiction and therefore does not typically produce lasting behavioral changes necessary for recovery.

The process of detoxification often is managed with medications that are administered by a physician in an inpatient or outpatient setting; therefore, it is referred to as “medically managed withdrawal.” Detoxification is generally considered a precursor to or a first stage of treatment because it is designed to manage the acute and potentially dangerous physiological effects of stopping drug use. Medications are available to assist in the withdrawal from opioids, benzodiazepines, alcohol, nicotine, barbiturates, and other sedatives. Detoxification should be followed by a formal assessment and referral to subsequent drug addiction treatment.

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LONG-TERM RESIDENTIAL TREATMENT

Long-term residential treatment provides care 24 hours a day, generally in nonhospital settings. The best-known residential treatment model is the therapeutic community (TC), with planned lengths of stay between 6 and 12 months. TCs focus on the “resocialization” of the individual and use the program’s entire community—including other residents, staff, and the social context—as active components of treatment. Addiction is viewed in the context of an individual’s social and psychological deficits, and treatment focuses on developing personal accountability and responsibility as well as socially productive lives. Treatment is highly structured and can be confrontational at times, with activities designed to help residents examine damaging beliefs, self-concepts, and destructive patterns of behavior and adopt new, more harmonious and constructive ways to interact with others. Many TCs offer comprehensive services, which can include employment training and other support services, on site. Research shows that TCs can be modified to treat individuals with special needs, including adolescents, women, homeless individuals, people with severe mental disorders, and individuals in the criminal justice system (see page 35).

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SHORT-TERM RESIDENTIAL TREATMENT

Short-term residential programs provide intensive but relatively brief treatment based on a modified 12-step approach. These programs were originally designed to treat alcohol problems, but during the cocaine epidemic of the mid-1980s, many began to treat other types of substance use disorders. The original residential treatment model consisted of a 3–6-week hospital-based inpatient treatment phase followed by extended outpatient therapy and participation in a self-help group, such as Alcoholics Anonymous. Following stays in residential treatment programs, it is important for individuals to remain engaged in outpatient treatment programs and/or aftercare programs. These programs help to reduce the risk of relapse once a patient leaves the residential setting.

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OUTPATIENT TREATMENT PROGRAMS

Outpatient treatment varies in the types and intensity of services offered. Such treatment costs less than residential or inpatient treatment and often is more suitable for people with jobs or extensive social supports. It should be noted, however, that low-intensity programs may offer little more than drug education. Other outpatient models, such as intensive day treatment, can be comparable to residential programs in services and effectiveness, depending on the individual patient's characteristics and needs. In many outpatient programs, group counseling can be a major component. Some outpatient programs are also designed to treat patients with medical or other mental health problems in addition to their drug disorders.

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Individualized Drug Counseling

Individualized drug counseling not only focuses on reducing or stopping illicit drug or alcohol use; it also addresses related areas of impaired functioning—such as employment status, illegal activity, and family/social relations—as well as the content and structure of the patient's recovery program. Through its emphasis on short-term behavioral goals, individualized counseling helps the patient develop coping strategies and tools to abstain from drug use and maintain abstinence. The addiction counselor encourages 12-step participation (at least one or two times per week) and makes referrals for needed supplemental medical, psychiatric, employment, and other services.

Group Counseling

Many therapeutic settings use group therapy to capitalize on the social reinforcement offered by peer discussion and to help promote drug-free lifestyles. Research has shown that when group therapy either is offered in conjunction with individualized drug counseling or is formatted to reflect the principles of cognitive-behavioral therapy or contingency management, positive outcomes are achieved. Currently, researchers are testing conditions in which group therapy can be standardized and made more community-friendly.

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TREATING CRIMINAL JUSTICE-INVOLVED DRUG ABUSERS AND ADDICTED INDIVIDUALS

Research has shown that combining criminal justice sanctions with drug treatment can be effective in decreasing drug abuse and related crime. Individuals under legal coercion tend to stay in treatment longer and do as well as or better than those not under legal pressure. Often, drug abusers come into contact with the criminal justice system earlier than other health or social systems, presenting opportunities for intervention and treatment prior to, during, after, or in lieu of incarceration—which may ultimately interrupt and shorten a career of drug use. More information on how the criminal justice system can address the problem of drug addiction can be found in *Principles of Drug Abuse Treatment for Criminal Justice Populations: A Research-Based Guide* (National Institute on Drug Abuse, revised 2007).

Each approach to drug treatment is designed to address certain aspects of drug addiction and its consequences for the individual, family, and society.



This section presents several examples of treatment approaches and components that have an evidence base supporting their efficacy. Each approach is designed to address certain aspects of drug addiction and its consequences for the individual, family, and society. Some of the approaches are intended to supplement or enhance existing treatment programs, and others are fairly comprehensive in and of themselves.

The following is not a complete list of efficacious evidence-based treatment approaches. More are under development as part of our continuing support of treatment research.

PHARMACOTHERAPIES

Opioid Addiction

Methadone

Methadone maintenance treatment is usually conducted in specialized settings (e.g., methadone maintenance clinics). These specialized treatment programs offer the long-acting synthetic opioid medication methadone at a dosage sufficient to prevent opioid withdrawal, block the effects of illicit opioid use, and decrease opioid craving.

Combined with behavioral treatment: The most effective methadone maintenance programs include individual and/or group counseling, as well as provision of or referral to other needed medical, psychological, and social services. In a study that compared opioid-addicted individuals receiving only methadone to those receiving methadone coupled with counseling, individuals who received only methadone showed some improvement in reducing opioid use; however, the addition of counseling produced significantly more improvement, and the addition of onsite medical/psychiatric, employment, and family services further improved outcomes.

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Buprenorphine

Buprenorphine is a partial agonist (it has both agonist and antagonist properties) at opioid receptors that carries a low risk of overdose. It reduces or eliminates withdrawal symptoms associated with opioid dependence but does not produce the euphoria and sedation caused by heroin or other opioids.

In 2000, Congress passed the Drug Addiction Treatment Act, allowing qualified physicians to prescribe Schedule III, IV, and V medications for the treatment of opioid addiction. This created a major paradigm shift that allowed access to opioid treatment in general medical settings, such as primary care offices, rather than limiting it to specialized treatment clinics.

Buprenorphine was the first medication to be approved under the Drug Addiction Treatment Act and is available in two formulations: Subutex® (a pure form of buprenorphine) and the more commonly prescribed Suboxone® (a combination of buprenorphine and the opioid antagonist naloxone). The unique formulation with naloxone produces severe withdrawal symptoms when addicted individuals inject it to get high, lessening the likelihood of diversion.

Physicians who provide office-based buprenorphine treatment for detoxification and/or maintenance treatment must have special accreditation. These physicians are also required to have the capacity to provide counseling to patients when indicated or, if they do not, to refer patients to those who do.

Office-based treatment of opioid addiction is a cost-effective approach that increases the reach of treatment and the options available to patients. Many patients have life circumstances that make office-based treatment a better option for them than specialty clinics. For example, they may live far away from treatment centers or have working hours incompatible with the clinic hours. Office-based addiction treatment is being offered by primary care physicians, psychiatrists, and other specialists, such as internists and pediatricians.

Patients stabilized on adequate, sustained dosages of methadone or buprenorphine can function normally. They can hold jobs, avoid the crime and violence of the street culture, and reduce their exposure to HIV by stopping or decreasing injection drug use and drug-related high-risk sexual behavior. Patients stabilized on these medications can also engage more readily in counseling and other behavioral interventions essential to recovery and rehabilitation.

PATIENTS STABILIZED ON ADEQUATE, SUSTAINED DOSAGES OF METHADONE OR BUPRENORPHINE CAN HOLD JOBS, AVOID CRIME AND VIOLENCE, AND REDUCE THEIR EXPOSURE TO HIV.

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Naltrexone

Naltrexone is a long-acting synthetic opioid antagonist with few side effects. An opioid antagonist blocks opioids from binding to their receptors and thereby prevents an addicted individual from feeling the effects associated with opioid use. Naltrexone as a treatment for opioid addiction is usually prescribed in outpatient medical settings, although initiation of the treatment often begins after medical detoxification in a residential setting. To prevent withdrawal symptoms, individuals must be medically detoxified and opioid-free for several days before taking naltrexone. The medication is taken orally either daily or three times a week for a sustained period. When used this way, naltrexone blocks all the effects, including euphoria, of self-administered opioids. The theory behind this treatment is that the repeated absence of the desired effects and the perceived futility of using the opioid will gradually diminish opioid craving and addiction. Naltrexone itself has no subjective effects (that is, a person does not perceive any particular drug effects) or potential for abuse, and it is not addictive. However, patient noncompliance is a common problem. Therefore,

a favorable treatment outcome requires an accompanying positive therapeutic relationship, effective counseling or therapy, and careful monitoring of medication compliance. Many experienced clinicians have found naltrexone best suited for highly motivated, recently detoxified patients who desire total abstinence because of external circumstances. Professionals, parolees, probationers, and prisoners in work-release status exemplify this group.

Combined with behavioral treatment: Motivational incentives, such as the offering of prizes or rewards for maintaining abstinence, have been shown to enhance the treatment compliance and efficacy of naltrexone for opioid addiction.

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Tobacco Addiction

Nicotine Replacement Therapy (NRT)

A variety of formulations of nicotine replacement therapies now exist, including the transdermal nicotine patch, nicotine spray, nicotine gum, and nicotine lozenges. Because nicotine is the main addictive ingredient in tobacco, the rationale for NRT is that stable low levels of nicotine will prevent withdrawal symptoms—which often drive continued tobacco use—and help keep people motivated to quit.

Bupropion (Zyban®)

Bupropion was originally marketed as an antidepressant (Wellbutrin®). It has mild stimulant effects through blockade of the reuptake of catecholamines, especially norepinephrine and dopamine. A serendipitous observation among depressed patients was the medication's efficacy in suppressing tobacco craving, promoting cessation without concomitant weight gain. Although bupropion's exact mechanisms of action in facilitating smoking cessation are unclear, it has FDA approval as a smoking cessation treatment.

Varenicline (Chantix®)

Varenicline is the most recently FDA-approved medication for smoking cessation. It acts on a subset of nicotinic receptors (alpha-4 beta-2) thought to be involved in the rewarding effects of nicotine. Varenicline acts as a partial agonist/antagonist at these receptors—this means that it mildly stimulates the nicotine receptor, but not sufficiently to allow the release of dopamine, which is important for the rewarding effects of nicotine. As an antagonist, varenicline also blocks the ability of nicotine to activate dopamine, interfering with the reinforcing effects of smoking, thereby reducing cravings and supporting abstinence from smoking.

Combined With Behavioral Treatment

Each of the above pharmacotherapies is recommended for use in combination with behavioral interventions, including group and individual therapies, as well as telephone quitlines. Through behavioral skills training, patients learn to avoid high-risk situations for smoking relapse and to plan strategies to cope with such situations when necessary. Coping techniques include cigarette refusal skills, assertiveness, and time management skills that patients practice in treatment, social, and work settings. Combined treatment is urged because behavioral and pharmacological treatments are thought to operate by different yet complementary mechanisms that can have additive effects. By dampening craving intensity, medications can give patients a leg up on enacting new strategies and skills.

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Alcohol Addiction

Naltrexone

Naltrexone blocks opioid receptors that are involved in the rewarding effects of drinking and the craving for alcohol. It reduces relapse to heavy drinking, defined as four or more drinks per day for women and five or more for men. Naltrexone cuts relapse risk during the first 3 months by about 36 percent but is less effective in helping patients maintain abstinence.

Acamprosate

Acamprosate (Campral[®]) acts on the gamma-aminobutyric acid (GABA) and glutamate neurotransmitter systems and is thought to reduce symptoms of protracted withdrawal, such as insomnia, anxiety, restlessness, and dysphoria. Acamprosate has been shown to help dependent drinkers maintain abstinence for several weeks to months, and it may be more effective in patients with severe dependence.

Disulfiram

Disulfiram (Antabuse[®]) interferes with degradation of alcohol, resulting in the accumulation of acetaldehyde, which, in turn, produces a very unpleasant reaction that includes flushing, nausea, and palpitations if the patient drinks alcohol. The utility and effectiveness of disulfiram are considered limited because compliance is generally poor. However, among patients who are highly motivated, disulfiram can be effective, and some patients use it episodically for high-risk situations, such as social occasions where alcohol is present. It can also be administered in a monitored fashion, such as in a clinic or by a spouse, improving its efficacy.

Topiramate

Topiramate is thought to work by increasing inhibitory (GABA) neurotransmission and reducing stimulatory

(glutamate) neurotransmission. Its precise mechanism of action in treating alcohol addiction is not known, and *it has not yet received FDA approval*. Topiramate has been shown in two randomized, controlled trials to significantly improve multiple drinking outcomes, compared with a placebo. Over the course of a 14-week trial, topiramate significantly increased the proportion of patients with 28 consecutive days of abstinence or non-heavy drinking. In both studies, the differences between topiramate and placebo groups were still diverging at the end of the trial, suggesting that the maximum effect may not have yet been reached. Importantly, efficacy was established in volunteers who were drinking upon starting the medication.

Combined With Behavioral Treatment

While a number of behavioral treatments have been shown to be effective in the treatment of alcohol addiction, it does not appear that an additive effect exists between behavioral treatments and pharmacotherapy. Studies have shown that getting help is one of the most important factors in treating alcohol addiction, compared to getting a particular type of treatment.

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BEHAVIORAL THERAPIES

Behavioral treatments help engage people in drug abuse treatment, provide incentives for them to remain abstinent, modify their attitudes and behaviors related to drug abuse, and increase their life skills to handle stressful circumstances and environmental cues that may trigger intense craving for drugs and prompt another cycle of compulsive abuse. Below are a number of behavioral therapies shown to be effective in addressing substance abuse (effectiveness with particular drugs is denoted in parentheses).

Cognitive-Behavioral Therapy *(Alcohol, Marijuana, Cocaine, Methamphetamine, Nicotine)*

Cognitive-behavioral therapy was developed as a method to prevent relapse when treating problem drinking, and later was adapted for cocaine-addicted individuals. Cognitive-behavioral strategies are based on the theory that learning processes play a critical role in the development of maladaptive behavioral patterns. Individuals learn to identify and correct problematic behaviors by applying a range of different skills that can be used to stop drug abuse and to address a range of other problems that often co-occur with it.

Cognitive-behavioral therapy generally consists of a collection of strategies intended to enhance self-control. Specific techniques include exploring the positive and negative consequences of continued use, self-monitoring to recognize drug cravings early on and to identify high-risk situations for use, and developing strategies for coping with and avoiding high-risk situations and the desire to use. A central element of this treatment is anticipating likely problems and helping patients develop effective coping strategies.

Research indicates that the skills individuals learn through cognitive-behavioral approaches remain after the completion of treatment. In several studies, most people receiving a cognitive-behavioral approach maintained the gains they made in treatment throughout the following year.

Current research focuses on how to produce even more powerful effects by combining cognitive-behavioral therapy with medications for drug abuse and with other types of behavioral therapies. Researchers are also evaluating how best to train treatment providers to deliver cognitive-behavioral therapy.

Further Reading:

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Carroll, K.M., et al. The use of contingency management and motivational/skills-building therapy to treat young adults with marijuana dependence. *Journal of Consulting and Clinical Psychology* 74(5):955–966, 2006.

Community Reinforcement Approach Plus Vouchers (*Alcohol, Cocaine*)

Community Reinforcement Approach (CRA) Plus Vouchers is an intensive 24-week outpatient therapy for treatment of cocaine and alcohol addiction. The treatment goals are twofold:

- To maintain abstinence long enough for patients to learn new life skills to help sustain it
- To reduce alcohol consumption for patients whose drinking is associated with cocaine use

Patients attend one or two individual counseling sessions each week, where they focus on improving family relations, learning a variety of skills to minimize drug use, receiving vocational counseling, and developing new recreational activities and social networks. Those who also abuse alcohol receive clinic-monitored disulfiram (Antabuse) therapy. Patients submit urine samples two or three times each week and receive vouchers for cocaine-negative samples. The value of the vouchers increases with consecutive clean samples. Patients may exchange vouchers for retail goods that are consistent with a cocaine-free lifestyle.

This approach facilitates patients' engagement in treatment and systematically aids them in gaining substantial periods of cocaine abstinence. The approach has been tested in urban and rural areas and used successfully in outpatient treatment of opioid-addicted adults and with inner-city methadone maintenance patients with high rates of intravenous cocaine abuse.

Further Reading:

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Silverman, K., et al. Sustained cocaine abstinence in methadone maintenance patients through voucher-based reinforcement therapy. *Archives of General Psychiatry* 53(5):409–415, 1996.

Smith, J.E.; Meyers, R.J.; and Delaney, H.D. The community reinforcement approach with homeless alcohol-dependent individuals. *Journal of Consulting and Clinical Psychology* 66(3):541–548, 1998.

Stahler, G.J., et al. Development and initial demonstration of a community-based intervention for homeless, cocaine-using, African-American women. *Journal of Substance Abuse Treatment* 28(2):171–179, 2005.

Contingency Management Interventions/ Motivational Incentives (Alcohol, Stimulants, Opioids, Marijuana, Nicotine)

Research has demonstrated the effectiveness of treatment approaches using contingency management principles, which involve giving patients in drug treatment the chance to earn low-cost incentives in exchange for drug-free urine samples. These incentives include prizes given immediately or vouchers exchangeable for food items, movie passes, and other personal goods. Studies conducted in both methadone programs and psychosocial counseling treatment programs demonstrate that incentive-based interventions are highly effective in increasing treatment retention and promoting abstinence from drugs.

Some concerns have been raised that a prize-based contingency management intervention could promote gambling—as it contains an element of chance—and that pathological gambling and substance use disorders can be comorbid. However, studies have shown no differences in gambling over time between those assigned to the contingency management conditions and those in the usual care groups, indicating that this prize-based contingency management procedure did not promote gambling behavior.

Further Reading:

Budney, A.J.; Moore, B.A.; Rocha, H.L.; and Higgins, S.T. Clinical trial of abstinence-based vouchers and cognitive-behavioral therapy for cannabis dependence. *Journal of Consulting and Clinical Psychology* 74(2):307–316, 2006.

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Elkashaf, A.; Vocci, F.; Huestis, M.; Haney, M.; Budney, A.; Gruber, A.; and el-Guebaly, N. Marijuana neurobiology and treatment. *Substance Abuse* 29(3):17–29, 2008.

Peirce, J.M., et al. Effects of lower-cost incentives on stimulant abstinence in methadone maintenance treatment: A National Drug Abuse Treatment Clinical Trials Network study. *Archives of General Psychiatry* 63(2):201–208, 2006.

Petry, N.M., et al. Effect of prize-based incentives on outcomes in stimulant abusers in outpatient psychosocial treatment programs: A National Drug Abuse Treatment Clinical Trials Network study. *Archives of General Psychiatry* 62(10):1148–1156, 2005.

Petry, N.M., et al. Prize-based contingency management does not increase gambling. *Drug and Alcohol Dependence* 83(3):269–273, 2006.

Prendergast, M.; Podus, D.; Finney, J.; Greenwell, L.; and Roll, J. Contingency management for treatment of substance use disorders: A meta-analysis. *Addiction* 101(11):1546–1560, 2006.

Roll, J.M., et al. Contingency management for the treatment of methamphetamine use disorders. *The American Journal of Psychiatry* 163(11):1993–1999, 2006.

Motivational Enhancement Therapy (Alcohol, Marijuana, Nicotine)

Motivational Enhancement Therapy (MET) is a patient-centered counseling approach for initiating behavior change by helping individuals resolve ambivalence about engaging in treatment and stopping drug use. This approach employs strategies to evoke rapid and internally motivated change, rather than guiding people stepwise through the recovery process. This therapy consists of an initial assessment battery session, followed by two to four individual treatment sessions with a therapist. In the first treatment session, the therapist provides feedback to the initial assessment battery, stimulating discussion about personal substance use and eliciting self-motivational statements. Motivational interviewing principles are used to strengthen motivation and build a plan for change. Coping strategies for high-risk situations are suggested and discussed with the patient. In subsequent sessions, the therapist monitors change, reviews cessation strategies being used, and continues to encourage commitment to change or sustained abstinence. Patients sometimes are encouraged to bring a significant other to sessions.

Research on MET suggests that its effects depend on the type of drug used by participants and on the goal of the intervention. This approach has been used successfully with alcoholics to improve both treatment engagement and treatment outcomes (e.g., reductions in problem drinking). MET has also been used successfully with adult marijuana-dependent individuals in combination

with cognitive-behavioral therapy, comprising a more comprehensive treatment approach. The results of MET are mixed for participants abusing other drugs (e.g., heroin, cocaine, nicotine, etc.) and for adolescents who tend to use multiple drugs. In general, MET seems to be more effective for engaging drug abusers in treatment than for producing changes in drug use.

Further Reading:

Baker, A., et al. Evaluation of a motivational interview for substance use with psychiatric in-patient services. *Addiction* 97(10):1329–1337, 2002.

Haug, N.A.; Svikis, D.S.; and Diclemente, C. Motivational enhancement therapy for nicotine dependence in methadone-maintained pregnant women. *Psychology of Addictive Behaviors* 18(3):289–292, 2004.

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Miller, W.R.; Yahne, C.E.; and Tonigan, J.S. Motivational interviewing in drug abuse services: A randomized trial. *Journal of Consulting and Clinical Psychology* 71(4):754–763, 2003.

Stotts, A.L.; Diclemente, C.C.; and Dolan-Mullen, P. One-to-one: A motivational intervention for resistant pregnant smokers. *Addictive Behaviors* 27(2):275–292, 2002.

The Matrix Model (*Stimulants*)

The Matrix Model provides a framework for engaging stimulant (e.g., methamphetamine and cocaine) abusers in treatment and helping them achieve abstinence. Patients learn about issues critical to addiction and relapse, receive direction and support from a trained therapist, become familiar with self-help programs, and are monitored for drug use through urine testing.

The therapist functions simultaneously as teacher and coach, fostering a positive, encouraging relationship with the patient and using that relationship to reinforce positive behavior change. The interaction between the therapist and the patient is authentic and direct but not confrontational or parental. Therapists are trained to conduct treatment sessions in a way that promotes the patient's self-esteem, dignity, and self-worth. A positive relationship between patient and therapist is critical to patient retention.

Treatment materials draw heavily on other tested treatment approaches and, thus, include elements of relapse prevention, family and group therapies, drug education, and self-help participation. Detailed treatment manuals contain worksheets for individual sessions; other components include family education groups, early recovery skills groups, relapse prevention groups, combined sessions, urine tests, 12-step programs, relapse analysis, and social support groups.

A number of studies have demonstrated that participants treated using the Matrix Model show statistically significant reductions in drug and alcohol use, improvements in psychological indicators, and reduced risky sexual behaviors associated with HIV transmission.

Further Reading:

Huber, A.; Ling, W.; Shoptaw, S.; Gulati, V.; Brethen, P.; and Rawson, R. Integrating treatments for methamphetamine abuse: A psychosocial perspective. *Journal of Addictive Diseases* 16(4):41–50, 1997.

Rawson, R., et al. An intensive outpatient approach for cocaine abuse: The Matrix model. *Journal of Substance Abuse Treatment* 12(2):117–127, 1995.

Rawson, R.A., et al. A comparison of contingency management and cognitive-behavioral approaches during methadone maintenance treatment for cocaine dependence. *Archives of General Psychiatry* 59(9):817–824, 2002.

12-Step Facilitation Therapy *(Alcohol, Stimulants, Opiates)*

Twelve-step facilitation therapy is an active engagement strategy designed to increase the likelihood of a substance abuser becoming affiliated with and actively involved in 12-step self-help groups and, thus, promote abstinence. Three key aspects predominate: *acceptance*, which includes the realization that drug addiction is a chronic, progressive disease over which one has no control, that life has become unmanageable because of drugs, that willpower alone is insufficient to overcome the problem, and that abstinence is the only alternative; *surrender*, which involves giving oneself over to a higher power, accepting the fellowship and support structure of other recovering addicted individuals, and following the recovery activities laid out by the 12-step program; and *active involvement* in 12-step meetings and related activities. While the efficacy of 12-step programs (and 12-step facilitation) in treating alcohol dependence has been established, the research on other abused drugs is more preliminary but promising for helping drug abusers sustain recovery. NIDA has recognized the need for more research in this area and is currently funding a community-based study to examine the impact of 12-step facilitation therapy for methamphetamine and cocaine abusers.

Further Reading:

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Behavioral Couples Therapy

Behavioral Couples Therapy (BCT) is a therapy for drug abusers with partners. BCT uses a sobriety/abstinence contract and behavioral principles to reinforce abstinence from drugs and alcohol. It has been studied as an add-on to individual and group therapy and typically involves 12 weekly couple sessions, lasting approximately 60 minutes each. Many studies support BCT's efficacy with alcoholic men and their spouses; four studies support its efficacy with drug-abusing men and women and their significant others. BCT also has been shown to produce higher treatment attendance, naltrexone adherence, and rates of abstinence than individual treatment, along with fewer drug-related, legal, and family problems at 1-year followup.

Recent research has focused on making BCT more community-friendly by adapting the therapy for delivery in fewer sessions and in a group format. Research is also being done to demonstrate cost-effectiveness and to test therapy effectiveness according to therapist training.

Further Reading:

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Klostermann, K.; Fals-Stewart, W.; and Yates, B.T. Behavioral couples therapy for substance abuse: A cost analysis. *Alcoholism: Clinical Experimental Research* 28(Suppl.):164A, 2004.

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Behavioral Treatments for Adolescents

Drug-abusing and addicted adolescents have unique treatment needs. Research has shown that treatments designed for and tested in adult populations often need to be modified to be effective in adolescents. Family involvement is a particularly important component for interventions targeting youth. Below are examples of behavioral interventions that employ these principles and have shown efficacy for treating addiction in youth.

Multisystemic Therapy

Multisystemic Therapy (MST) addresses the factors associated with serious antisocial behavior in children and adolescents who abuse alcohol and other drugs. These factors include characteristics of the child or adolescent (e.g., favorable attitudes toward drug use), the family (poor discipline, family conflict, parental drug abuse), peers (positive attitudes toward drug use), school (dropout, poor performance), and neighborhood (criminal subculture). By participating in intensive treatment in natural environments (homes, schools, and neighborhood settings),

most youths and families complete a full course of treatment. MST significantly reduces adolescent drug use during treatment and for at least 6 months after treatment. Fewer incarcerations and out-of-home juvenile placements offset the cost of providing this intensive service and maintaining the clinicians' low caseloads.

Further Reading:

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Henggeler, S.W., et al. Home-based multisystemic therapy as an alternative to the hospitalization of youths in psychiatric crisis: Clinical outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry* 38(11):1331–1339, 1999.

Henggeler, S.W.; Halliday-Boykins, C.A.; Cunningham, P.B.; Randall, J.; Shapiro, S.B.; and Chapman, J.E. Juvenile drug court: Enhancing outcomes by integrating evidence-based treatments. *Journal of Consulting and Clinical Psychology* 74(1):42–54, 2006.

Henggeler, S.W.; Pickrel, S.G.; Brondino, M.J.; and Crouch, J.L. Eliminating (almost) treatment dropout of substance-abusing or dependent delinquents through home-based multisystemic therapy. *The American Journal of Psychiatry* 153(3):427–428, 1996.

Huey, S.J.; Henggeler, S.W.; Brondino, M.J.; and Pickrel, S.G. Mechanisms of change in multisystemic therapy: Reducing delinquent behavior through therapist adherence and improved family functioning. *Journal of Consulting and Clinical Psychology* 68(3):451–467, 2000.

Multidimensional Family Therapy for Adolescents

Multidimensional Family Therapy (MDFT) for adolescents is an outpatient family-based alcohol and other drug abuse treatment for teenagers. MDFT views adolescent drug use in terms of a network of influences (individual, family, peer, community) and suggests that reducing unwanted behavior and increasing desirable behavior occur in multiple ways in different settings. Treatment includes individual and family sessions held in the clinic, in the home, or with family members at the family court, school, or other community locations.

During individual sessions, the therapist and adolescent work on important developmental tasks, such as developing decisionmaking, negotiation, and problemsolving skills. Teenagers acquire vocational skills and skills in communicating their thoughts and feelings to deal better with life stressors. Parallel sessions are held with family members. Parents examine their particular parenting styles, learning to distinguish influence from control and to have a positive and developmentally appropriate influence on their children.

Further Reading:

Dennis, M., et al. The Cannabis Youth Treatment (CYT) Study: Main findings from two randomized clinical trials. *Journal of Substance Abuse Treatment* 27(3):197–213, 2004.

Liddle, H.A.; Dakof, G.A.; Parker, K.; Diamond, G.S.; Barrett, K.; and Tejeda, M. Multidimensional family therapy for adolescent drug abuse: Results of a randomized clinical trial. *The American Journal of Drug and Alcohol Abuse* 27(4):651–688, 2001.

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Liddle, H.A.; Rowe, C.L.; Dakof, G.A.; Ungaro, R.A.; and Henderson, C.E. Early intervention for adolescent substance abuse: Pretreatment to posttreatment outcomes of a randomized clinical trial comparing multidimensional family therapy and peer group treatment. *Journal of Psychoactive Drugs* 36(1):49–63, 2004.

Schmidt, S.E.; Liddle, H.A.; and Dakof, G.A. Effects of multidimensional family therapy: Relationship of changes in parenting practices to symptom reduction in adolescent substance abuse. *Journal of Family Psychology* 10(1):1–16, 1996.

Brief Strategic Family Therapy

Brief Strategic Family Therapy (BSFT) targets family interactions that are thought to maintain or exacerbate adolescent drug abuse and other co-occurring problem behaviors. Such problem behaviors include conduct problems at home and at school, oppositional behavior, delinquency, associating with antisocial peers, aggressive and violent behavior, and risky sexual behavior. BSFT is based on a family systems approach to treatment, where family members' behaviors are assumed to be interdependent such that the symptoms of any one member (the drug-abusing adolescent, for example) are indicative, at least in part, of what else is going on in the family system. The role of the BSFT counselor is to identify the patterns of family interaction that are associated with the adolescent's behavior problems and to assist in changing those problem-maintaining family patterns. BSFT is meant to be a flexible approach that can be adapted to a broad range of family situations in various settings (mental health clinics, drug abuse treatment programs, other social service settings, and families' homes) and in various treatment modalities (as a primary outpatient intervention, in combination with residential or day treatment, and as an aftercare/continuing-care service to residential treatment).

Further Reading:

Coatsworth, J.D.; Santisteban, D.A.; McBride, C.K.; and Szapocznik, J. Brief Strategic Family Therapy versus community control: Engagement, retention, and an exploration of the moderating role of adolescent severity. *Family Process* 40(3):313–332, 2001.

Santisteban, D.A.; Coatsworth, J.D.; Perez-Vidal, A.; Mitrani, V.; Jean-Gilles, M.; and Szapocznik, J. Brief Structural/Strategic Family Therapy with African-American and Hispanic high-risk youth. *Journal of Community Psychology* 25(5):453–471, 1997.

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Santisteban, D.A.; Szapocznik, J.; Perez-Vidal, A.; Kurtines, W.M.; Murray, E.J.; and Laperriere, A. Efficacy of intervention for engaging youth and families into treatment and some variables that may contribute to differential effectiveness. *Journal of Family Psychology* 10(1):35–44, 1996.

Szapocznik, J., et al. Engaging adolescent drug abusers and their families in treatment: A strategic structural systems approach. *Journal of Consulting and Clinical Psychology* 56(4):552–557, 1988.

GENERAL INQUIRIES

Inquiries about NIDA's behavioral treatment research activities should be directed to the Division of Clinical Neuroscience and Behavioral Research at 301-443-0107. For questions regarding NIDA's medications development program, please contact the Division of Pharmacotherapies and Medical Consequences of Drug Abuse at 301-443-6173. For questions regarding treatment organization, management, financing, effectiveness, and cost-effectiveness research, please contact the Division of Epidemiology, Services and Prevention Research at 301-443-4060; for questions regarding NIDA-supported clinical trials, please call the National Drug Abuse Treatment Clinical Trials Network at 301-443-6697; and for questions regarding NIDA's HIV/AIDS research, please contact the AIDS Research Program at 301-443-1470. Additional general information is available at www.drugabuse.gov or by calling 301-443-1124.

NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM (NIAAA)

NIAAA provides leadership in the national effort to reduce alcohol-related problems by conducting and supporting research in a wide range of scientific areas, including genetics, neuroscience, epidemiology, health risks and benefits of alcohol consumption, prevention, and treatment; coordinating and collaborating with other research institutes and Federal programs on alcohol-related issues; collaborating with international, national, State, and local institutions, organizations, agencies, and programs engaged in alcohol-related work; and translating and disseminating research findings to health care providers, researchers, policymakers, and the public. Additional information is available at www.niaaa.nih.gov or by calling 301-443-3860.

NATIONAL INSTITUTE OF MENTAL HEALTH (NIMH)

The mission of NIMH is to transform the understanding and treatment of mental illnesses through basic and clinical research, paving the way for prevention, recovery, and cure. In support of this mission, NIMH generates research and promotes research training to fulfill the following four objectives: promote discovery in the brain and behavioral sciences to fuel research on the causes of mental disorders; chart mental illness trajectories to determine when, where, and how to intervene; develop new and better interventions that incorporate the diverse needs and circumstances of people with mental illnesses; and strengthen the public health impact of NIMH-supported research. Additional information is available at www.nimh.nih.gov or by calling 301-443-4513.

CENTER FOR SUBSTANCE ABUSE TREATMENT (CSAT)

CSAT, a part of the Substance Abuse and Mental Health Services Administration (SAMHSA), is responsible for supporting treatment services through a block grant program, as well as disseminating findings to the field and promoting their adoption. CSAT also operates the 24-hour National Treatment Referral Hotline (1-800-662-HELP), which offers information and referral services to people seeking treatment programs and other assistance. CSAT publications are available through the National Clearinghouse on Alcohol and Drug Information (1-800-729-6686). Additional information about CSAT can be found on SAMHSA's Web site at www.csat.samhsa.gov.

SELECTED NIDA EDUCATIONAL RESOURCES ON DRUG ADDICTION TREATMENT

The following are available from the NIDA *DrugPubs* Research Dissemination Center, the National Technical Information Service (NTIS), or the Government Printing Office (GPO). To order, refer to the *DrugPubs* (877-NIDA-NIH [643-2644]), NTIS (1-800-553-6847), or GPO (202-512-1800) number provided with the resource description.

MANUALS AND CLINICAL REPORTS

Principles of Drug Abuse Treatment for Criminal Justice Populations: A Research-Based Guide

(Revised 2007). Provides 13 essential treatment principles and includes resource information and answers to frequently asked questions. Publication #NIH 07-5316. Available online at www.nida.nih.gov/PODAT_C7.

Measuring and Improving Cost, Cost-Effectiveness, and Cost-Benefit for Substance Abuse Treatment Programs

(1999). Offers tools for substance abuse treatment program managers to calculate the costs of their programs and investigate the relationship between those costs and treatment outcomes. Available online at www.nida.nih.gov/IMPCOST/IMPCOSTIndex.html.

A Cognitive-Behavioral Approach: Treating Cocaine Addiction

(1998). This is the first in NIDA's "Therapy Manuals for Drug Addiction" series. Describes cognitive-behavioral therapy, a short-term, focused approach to helping cocaine-addicted individuals become abstinent from cocaine and other drugs. Available online at www.nida.nih.gov/TXManuals/CBT/CBT1.html.

A Community Reinforcement Plus Vouchers Approach: Treating Cocaine Addiction (1998). This is the second in NIDA's "Therapy Manuals for Drug Addiction" series. This treatment integrates a community reinforcement approach with an incentive program that uses vouchers. Available online at www.nida.nih.gov/TXManuals/CRA/CRA1.html.

An Individual Drug Counseling Approach to Treat Cocaine Addiction: The Collaborative Cocaine Treatment Study Model (1999). This is the third in NIDA's "Therapy Manuals for Drug Addiction" series. Describes specific behavioral/cognitive models that can be implemented in a wide range of drug abuse treatment settings. Available online at www.nida.nih.gov/TXManuals/IDCA/IDCA1.html.

Addiction Severity Index (ASI). Provides a structured clinical interview designed to collect information about substance use and functioning in life areas from adult clients seeking drug abuse treatment. For more information on using the ASI and to obtain copies of the most recent edition, please visit www.tresearch.org/resources/instruments.htm#top.

OTHER USEFUL PUBLICATIONS

Drugs, Brains, and Behavior: The Science of Addiction (Reprinted 2008). This publication provides an overview of the science behind the disease of addiction. Publication #NIH 08-5605. Available online at www.nida.nih.gov/scienceofaddiction.

A Collection of *NIDA Notes* Articles That Address Drug Abuse Treatment (Reprinted 2008). This collection of *NIDA Notes* articles showcases NIDA treatment-related research. Publication #NN0026. Available online at www.nida.nih.gov/NIDA_Notes/NN0026.html.

NIDA InfoFacts: Treatment Approaches for Drug Addiction (Revised 2008). This is a fact sheet covering research findings on effective treatment approaches for drug abuse and addiction. Available online at www.nida.nih.gov/infofacts/treatmeth.html.

***Alcohol Alert* (published by NIAAA)**. This is a quarterly bulletin that disseminates important research findings on alcohol abuse and alcoholism. Available online at www.niaaa.nih.gov/Publications/AlcoholAlerts.

NIAAA Clinical Guidelines/Related Resources. This Web site has information to help clinicians in the screening, diagnosis, and treatment of patients who drink too much. Available online at www.niaaa.nih.gov/Publications/EducationTrainingMaterials/guide.htm.

Research Report Series: Therapeutic Community (2002). This report provides information on the role of residential drug-free settings and their role in the treatment process. Publication #PHD947. Available online at www.nida.nih.gov/ResearchReports/Therapeutic/default.html.

The NIDA Clinical Toolbox: Science-Based Materials for Drug Abuse Treatment Providers (2000). This Web site contains science-based materials for drug abuse treatment providers. Links are provided to treatment manuals, *Research Reports*, and more. Available online at www.nida.nih.gov/TB/Clinical/ClinicalToolbox.html.

INITIATIVES DESIGNED TO MOVE TREATMENT RESEARCH INTO PRACTICE

CLINICAL TRIALS NETWORK

Assessing the real-world effectiveness of evidence-based treatments is a crucial step in bringing research to practice. Established in 1999, NIDA's National Drug Abuse Treatment Clinical Trials Network (CTN) uses community settings with diverse patient populations and conditions to adjust and test protocols to meet the practical needs of addiction treatment. Since its inception, the CTN has tested pharmacological and behavioral interventions for drug abuse and addiction, along with common co-occurring conditions (e.g. HIV and PTSD) among various target populations, including adolescent drug abusers, pregnant drug-abusing women, and Spanish-speaking patients. The CTN has also tested prevention strategies in drug-abusing groups at high risk for hepatitis C (HCV) and HIV and has become a key element of NIDA's multipronged approach to move promising science-based drug addiction treatments rapidly into community settings. For more information on the CTN, please visit www.drugabuse.gov/CTN/Index.htm.

CRIMINAL JUSTICE–DRUG ABUSE TREATMENT STUDIES

NIDA is taking an approach similar to the CTN to enhance treatment for drug-addicted individuals involved with the criminal justice system through the CJ-DATS (Criminal Justice–Drug Abuse Treatment Studies). Whereas NIDA's CTN has as its overriding mission the improvement of the quality of drug abuse treatment by moving innovative approaches into the larger community, research supported through

CJ-DATS is designed to effect change by bringing new treatment models into the criminal justice system and thereby improve outcomes for offenders with substance use disorders. It seeks to achieve better integration of drug abuse treatment with other public health and public safety forums and represents a collaboration among NIDA; the Substance Abuse and Mental Health Services Administration (SAMHSA); the Centers for Disease Control and Prevention (CDC); Department of Justice agencies; and a host of drug treatment, criminal justice, and health and social service professionals.

BLENDING TEAMS

Another way in which NIDA is seeking to actively move science into practice is through a joint venture with SAMHSA and its nationwide network of Addiction Technology Transfer Centers (ATTCs). This process involves the collaborative efforts of community treatment practitioners, SAMHSA trainers, and NIDA researchers, some of whom form “Blending Teams” to create products and devise strategic dissemination plans for them. Through the creation of products designed to foster adoption of new treatment strategies, Blending Teams are instrumental in getting the latest evidence-based tools and practices into the hands of treatment professionals. To date, a number of products have been completed. Topics have included increasing awareness of the value of buprenorphine therapy and enhancing healthcare workers’ proficiency in using tools such as the Addiction Severity Index (ASI), motivational interviewing, and motivational incentives. For more information on Blending products, please visit NIDA’s Web site at www.nida.nih.gov/blending.

OTHER FEDERAL RESOURCES

NIDA *DrugPubs* Research Dissemination Center.

NIDA publications and treatment materials are available from this information source. Staff provide assistance in English and Spanish, and have TDD capability. Phone: 877-NIDA-NIH (877-643-2644); TTY/TDD: 240-645-0228; fax: 240-645-0227; e-mail: drugpubs@nida.nih.gov; Web site: www.drugabuse.gov.

The National Registry of Evidence-Based Programs and Practices. This database of interventions for the prevention and treatment of mental and substance use disorders is maintained by SAMHSA and can be accessed at www.nrepp.samhsa.gov.

The National Clearinghouse for Alcohol and Drug Information (NCADI). Publications from other Federal agencies are available from this information source. Staff provide assistance in English and Spanish, and have TDD capability. Phone: 800-729-6686; Web site: www.ncadi.samhsa.gov.

The National Institute of Justice (NIJ). As the research agency of the Department of Justice, NIJ supports research, evaluation, and demonstration programs relating to drug abuse in the context of crime and the criminal justice system. For information, including a wealth of publications, contact the National Criminal Justice Reference Service at 800-851-3420 or 301-519-5500; or visit www.ojp.usdoj.gov/nij.

Clinical Trials. For more information on federally and privately supported clinical trials please visit www.clinicaltrials.gov.

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