Substance Use Disorders

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Series Introduction

We stand on the threshold of a new Golden Age of clinical and behavioral neuroscience with psychiatry at its fore. With the Pittsburgh Pocket Psychiatry series, we intend to encompass the breadth and depth of our current understanding of human behavior in health and disease. Using the structure of resident didactic teaching, we will be able to ensure that each subject area relevant for both current and future practicing psychiatrists is detailed and described. New innovations in diagnosis and treatment will be reviewed and discussed in the context of existing knowledge, and each book in the series will propose new directions for scientific inquiry and discovery. The aim of the series as a whole is to integrate findings from all areas of medicine and neuroscience previously segregated as "mind" or "body," "psychological" or "biological." Thus, each book from the Pittsburgh Pocket Psychiatry series will stand alone as a standard text for anyone wishing to learn about a specific subject area. The series will be the most coherent and flexible learning resource available.

David J. Kupfer, MD
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About *Substance Use Disorders*

We are pleased to offer you this book, ***Substance Use Disorders***, which focuses on the common clinical problem of substance use disorders, and one in which health care practitioners can make a difference. The chapters were written by highly experienced researchers, educators, and clinicians in diverse medical, academic, and clinical settings. This essential volume explores what key clinical issues, treatment, and prevention would look like if they were to be based on the latest science available. It also provides a menu of evidence-based approaches and practical recommendations for reduction of the huge personal and societal burden associated with substance use disorders. Throughout this book, we have been careful about the terminology to describe clinical conditions rather than labeling individuals. In describing conditions, we have adhered to the current terms of "substance use disorder" as well as "alcohol and drug problems," "addiction," and "dependence." And for people who are under professional care, we have used the terms "patient" as well as "client," "people," and "individuals." Similarly, for practitioners who provide treatment for substance use disorders, we have used "trainees," "fellows (addiction)," "clinicians," "practitioners," and "residents."

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Contents

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Chapter 1

Epidemiology and Diagnostic Classification of Substance Use Disorders

Adam Ligas and Antoine Douaihy

Key Points

- Understanding the initiation, development, and maintenance of substance use disorders is a complex problem.
- The 12-month prevalence rates of substance dependence in U.S. adults are 12% for alcohol and 2% to 3% for illicit drugs.
- In U.S. youth, the lifetime prevalences for substance use disorders are 8% for alcohol and 2% to 3% for illicit drug use.
- The increases in substance use disorders across adolescence into early adulthood are significant.
- Genetic factors have a major influence on progression of substance use to dependence, whereas environmental factors may play a larger role in exposure, initiation, and continuation of use past an experimental level.
- Proposed changes in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (APA-DSM), 5th edition, include a new name of "Substance Use and Addictive Disorders," dropping of abuse and dependence as disease categories, addition of "drug craving" as a criterion, and dropping of "encounters with law enforcement" as a criterion.
- Substance use disorders occur along a continuum of severity.

The incidence and prevalence of substance use disorders (SUDs) continue to present major costs to individuals, families, and societies at large. According to the National Institute on Drug Abuse (NIDA, 2004), approximately $484 billion is spent each year on substance abuse–related costs, including treatment, health care expenditures, lost productivity, and crime. In addition to the public cost statistics, SUDs are associated with involvement in risky impulsive behaviors, such as condom nonuse and sharing drug equipment, and in subsequent medical and psychosocial consequences (Wallace, 2001). The high 12-month prevalence rates of substance dependence in U.S. adults (12% for alcohol use and 2% to 3% for illicit drugs) approximate those of other mental illnesses as well as chronic physical disorders with significant public health impact. This chapter aims to provide an overview of the epidemiological patterns of SUDs in the general population of adults and adolescents and discusses the history of diagnoses in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (APA-DSM) and the evolving definitions and concepts of SUDs.

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Epidemiology of Substance Use Disorders

Prospective Studies of Substance Use

Many prospective studies of population-based samples of youths and young adults across the world have provided data regarding the risk factors for use and progression into problematic patterns (Fergusson et al., 2008). Some studies have also examined the extent to which adolescent substance, alcohol, and drug use predicted subsequent problematic use of alcohol, and others provided data on the role of cannabis use patterns and risk for progression of drug use (McCambridge et al., 2011; Swift et al., 2012). For example, adolescents who engage in heavy episodic use of cannabis are at greater risk for subsequent illicit drug use (Patton et al., 2007).

Other studies examined the characteristics of polysubstance users and identified cannabis, nicotine, and alcohol as substances used commonly together and in conjunction with other drugs (Fergusson et al., 2008; Patton et al., 2007). Individuals who are polysubstance users are also more likely to have SUDs (Merikangas et al., 1998). Some studies looked at the consequences of substance use, such as the increased risk for incident psychosis among cannabis users (Hall & Degenhardt, 2011). NIDA, the National Institute on Alcohol Abuse and Alcoholism (NIAAA), and the Services Administration for Mental Health and Substance Abuse (SAHMSA) have provided significant data on tracking patterns of substance use and abuse and their consequences. For instance, data from the Monitoring the Future Survey (MTF), which is a descriptive ongoing study of the behaviors, attitudes, and values of American secondary school students, college students, and young adults, included 46,482 participants in 2010 (Johnston et al., 2011) and found increases in the overall rate of illicit drug use for all grades (8th, 10th, and 12th). Older students (12th graders) showed increases in the use of marijuana and high rates of alcohol use (Johnston et al., 2011). The MTF does not evaluate the problematic patterns of use.

Prevalence and Rates of Substance Use Disorders in the United States

Adults

Moving beyond simply using licit and illicit drugs, three nationally representative surveys collect data on substance use prevalence in U.S. adults: the National Comorbidity Survey Replication (NCS-R) (Kessler et al., 2004); the National Epidemiological Survey on Alcohol and Related Conditions (NESARC) (Grant et al., 2004); and the National Survey on Drug Use and Health (NSDUH) (SAMHSA, 2011). These studies provide data on the prevalence of substance abuse and dependence as defined by DSM-IV and DSM-IV-TR. The prevalence of alcohol use disorders in the NESARC study were greater than those estimated in the NCS-R survey: 4.7% and 3.8% for 12 months and 17.8% and 12.5% for lifetime abuse and dependence, respectively, in the NESARC and 3.1% and 1.3% for 12 months and 13.2%

and 5.4% for lifetime abuse and dependence, respectively, in the NCS-R. The estimates of drug use disorders were comparable in the two studies.

Youth

New findings from the nationally representative samples of youths between the ages of 13 and 18 years showed that the lifetime prevalence of alcohol use disorders is approximately 8% and that of illicit drug use disorders is 2% to 3% (Merikangas et al., 2010; SAMHSA, 2011; Swendsen et al., 2012). These rates point to the importance of identifying early-onset SUD in adolescents and providing treatment. In addition, Individuals who develop serious consequences with substance use in adolescence are more likely to have these problems persist into adulthood (Grant & Dawson, 1997; Rohde et al., 2001).

Sociodemographic Data

Use patterns may differ by gender and age. For example, the NSDUH study (2011) includes the full age spectrum from adolescence through adulthood and showed that males have nearly double the rates of both alcohol and drug use disorders compared with females, which is highly consistent across studies. The gender differences are more pronounced in adults than in adolescents (Merikangas et al., 2010), in whom males are only 1.3 times more likely to have an SUD than females. Although SUDs in general are more common among males than females, females have greater rates of abuse of some specific substances such as cocaine and psychotherapeutic drugs (Cotto et al., 2010). In regard to age, the combined NCS-R and NCS-A (Adolescent Supplement) (Merikangas et al., 2010; Swendsen et al., 2012) showed that the peak prevalence of both alcohol and illicit drug use disorders occurs in late adolescence and early adulthood, and this trend is confirmed from the findings from NESARC study (Grant et al., 2008; Merkingas et al., 2010). Although sociodemographic factors are important to consider, progression from use to abuse and dependence is complex and related to other individual, genetic, and familial factors (Merikangas & McClair, 2012).

Genetic Epidemiology

Genetic epidemiology focuses on the role of genetic factors that interact with other domains of risk to enhance vulnerability or protection against disease. It is population-based research, and its goal is to detect the joint effects of genes and environment (Merikangas & Low, 2005). Multiple studies have consistently demonstrated that genetic factors have a major influence on progression of substance use to dependence, whereas environmental factors may play a larger role in exposure, initiation, and continuation of use past an experimental level (see Merikangas & McClair, 2012, for review). However, no single gene or environmental factor will explain the risk for onset or chronicity. The genetic contribution to SUD is complex and involves multiple neuropathways. Future studies identifying more data on genetic associations and environmental effects may result in progress in the prevention and treatment of SUDs.

DSM Classification of Substance Use Disorders

In the early 1950s, the first edition of the DSM (DSM-I, 1952) clustered alcoholism and drug addiction with sociopathic personality disturbances, identifying individuals with addictions as suffering from "deep-seated personality disturbance." There is no clear description of the clinical manifestations of people with addictions, just a brief paragraph on the presumed etiology of the disorder. In DSM-II (1968), alcohol and drug addictions remained as subcategories of "personality disorders and certain other nonpsychotic mental disorders." Several new terms emerged, such as *episodic excessive drinking, habitual excessive drinking,* and *alcohol addiction.* Similarly, drug dependence was developed to include subcategories by specific drug class, with some description of physiological signs and symptoms of dependence. DSM-III (1980) was the first to identify substance abuse and dependence as separate pathological conditions. The separation of abuse and dependence was based on findings from longitudinal research showing that many people with a history of alcohol problems never progressed to dependence (Cahalan, 1970). As of DSM-III, "alcoholism" was no longer used as a diagnosis. In DSM-III, there was a separate category for substance use disorders instead of being represented under personality disorders. In addition, DSM-III suggested that social and cultural factors contributed to the abuse and dependence, but no references were made to any specific etiologies. This is a shift from considering addiction as personality pathology. DSM-III defined abuse and dependence, and "abuse" was the presence of drug-related problems in the absence of physiological changes. In DSM-III-R (1987), the behavioral aspects of substance use disorders were incorporated with the physiological components. The "abuse" diagnosis remained a residual category for people who had never met criteria for dependence. DSM-IV (1994) continued the definitions of abuse and dependence and added more than 100 different substance-related disorders for 12 different classes of drugs. DSM-IV clearly separated the criteria for dependence from those of abuse. A transitional text revision (DSM-IV-TR, 2000) defined "substance abuse" as meeting any one or four criteria revolving around recurrent problems related to the substance and "dependence" as meeting three or more of seven physiological or behavioral criteria. The criteria for SUDs within DSM-IV are often marked by significant overlap, which points to the issue of whether these diagnoses really account for two fundamentally separate disorders or whether they may be better understood by gradations of a single disorder on a continuum of severity (O'Brien, 2011; West & Miller 2011).

Proposed Diagnostic Changes from DSM-IV to DSM5

The fifth edition of the DSM (DSM5) revisits the classification and criteria of substance use disorders. The planned revisions based on DSM5 task force publications and announcements (available at the time of this book's publication) are explained below (APA, May 2012a).

DSM Section Changes

The first major change is a renaming of the DSM section itself. In DSM-IV-TR, the section was called "Substance Related Disorders." The committee that published that section agreed on how the disorders should be defined, but not on what the disorders should be called. There was a split among committee members regarding using the term "addiction" versus "dependence." There were concerns that the term "addiction" was pejorative and would lead to stigma and alienation of the patients who were looking for help (O'Brien, 2011a). The more neutral term "dependence" was eventually chosen by the committee by the margin of a single vote. The problem was that "dependence" was already in use by clinicians to define withdrawal symptoms that occurred with medications used to treat pain, depression, or anxiety (O'Brien, 2011a). The overlapping terminology resulted in confusion among physicians and patients (O'Brien, 2011a; O'Brien et al., 2006). To assist in clarifying the confusion that resulted from previous DSM terminology, the "Substance Related Disorders" section is proposed to carry the name "Substance Use and Addictive Disorders." The inclusion of "addictive" represents the fact that the word "addiction" has become more commonplace and may now lack the same pejorative influence debated during the DSM-III revision. Unfortunately, there is a lack of studies as to whether "addiction" is pejorative. Furthermore, the connotations of words can change over time and between cultures (O'Brien, 2011a). To address this possibility and to "minimize controversy" (O'Brien, 2011a), the DSM5 proposal names the individual disorders with the more neutral "substance use disorders" (O'Brien, 2011a).

The test-retest reliability of DSM-IV "dependence" was uniform and was very good to excellent, whereas the reliability of "abuse" was more variable and lower (APA, May 2012c; Hasin et al., 2006). It was assumed that abuse was a prodrome of dependence; however, several studies have shown that this assumption was erroneous (APA, May 2012c; Grant et al., 2001; Hasin et al., 1997; Schuckit et al., 2008;). Studies showed that abuse was most commonly diagnosed through the "hazardous use" criterion and raised concerns about whether the sole symptom of risky behavior indicated a true psychiatric diagnosis (APA, May 2012c; Hasin et al., 1999). Additionally, there were individuals who met two criteria for dependence, yet no criteria for abuse. These individuals could have substance problems at the severity of those with a diagnosis, but were left undiagnosed by the DSM-IV criteria. Authors commenting on this phenomenon termed these individuals "diagnostic orphans" (Degenhardt et al., 2002, p. 10; Hasin & Paykin, 1999; Lynseky & Agrawal, 2007; Martin et al., 2008; Ray, 2008). The DSM website indicated multiple studies that demonstrated high correlations between dependence and abuse. The above factors considered, and with the available evidence, the DSM5 proposal eliminates the diagnosis of "substance abuse" (APA, May 2012c).

Severity Specifiers and Criteria Changes

The severity specifiers of each disorder are also being reconsidered for DSM5. The proposed changes would include a severity scale that includes "no diagnosis," mild, moderate, and severe. The severities will depend on the number of diagnostic criteria met (APA, Apr 2012a). The criteria

counts help determine severity between individuals, but there is a lack of data on whether counts of criteria met can usefully measure change in severity in a person over relatively brief periods of time (APA, Apr 2012a). The substance-related disorders workgroup recommends that the following three measures obtained at intake and follow-up are used for within-subjects, across-time changes in severity over periods of a few days, weeks, or months according to studies from clinical trials literature: (1) self-reported frequency of use; (2) similar reports from another closely involved observer when possible; and (3) appropriately timed testing for substances through urine, blood, hair, saliva, or breath (Antone et al., 2006; APA, Apr 2012a; Crits-Cristoph et al., 1999; O'Malley et al., 2007).

The DSM5 proposal includes adding "craving or a strong desire or urge to use [given substance]" to the criteria list for diagnosing substance use disorders. The DSM website cites the prevalence of the symptom with tendency to exist on the severe end of the severity spectrum, the use as an outcome measure in many clinical trials and population studies, and brain imaging studies demonstrating subjective cravings that are precipitated by drug-related cues as the reasons to include craving as a criterion for diagnosis (APA, Apr 2012b). The criteria for "legal difficulties" were found to be influenced heavily by local laws and customs, and were removed from the criteria list (APA, 2000; APA, May 2012a; APA, Apr 2012b; O'Brien, 2011b). The DSM website cites that statistical analysis of population studies indicates that the legal problems criterion has low prevalence relative to other criteria and that the removal of it from the criteria list will have very little effect on the prevalence of substance use disorders (APA, Apr 2012b). The remainder of symptoms created for diagnosing substance dependence in DSM-IV-TR remain unchanged to diagnose substance use disorder in DSM5 (APA, Apr 2012b; O'Brien, 2011a). To diagnose a substance use disorder two (or more) criteria will need to be met instead of the previous three (or more) criteria for the diagnosis of dependence (APA, Apr 2012b).

The proposal also includes the revision of the criteria for opioid use disorder. It will no longer include tolerance or withdrawal for individuals who are taking medications under medical supervision. The specifier "on agonist therapy" will be changed to "on maintenance therapy" to reflect individuals who are prescribed agonist medication such as methadone or buprenorphine and in whom no criteria for a substance use disorder have been met for that class of medication (except tolerance to, or withdrawal from, the agonist), and individuals who are maintained on a partial agonist, an agonist or antagonist, or a full antagonist such as oral naltrexone or depot naltrexone. (APA, Apr 2012b)

Specifiers for remission will include early remission and sustained remission and will no longer include the "partial" or "sustained" specifiers present in DSM-IV-TR. The early remission specifier will be used if, for at least 3 months, but for less than 12 months, the individual does not meet any of the criteria for a substance use disorder with the exception of cravings. The sustained remission specifier will be used if none of the criteria are met with the exception of cravings (APA, Apr 2012b).

The Substance Use and Addictive Disorders General Section

This section will be organized by substance in DSM5 instead of by diagnosis as it was in DSM-IV (APA, 2000; APA, May 2012a). The substance disorders work group is working with other work groups regarding the substance-induced disorder criteria. The disorders will be listed in the Substance Use and Addictive Disorders section as well as the chapter containing the induced disorder. These disorders are proposed to include the following: substance-induced psychotic disorder; substance-induced bipolar disorder; substance-induced depressive disorder; substance-induced anxiety disorder; substance-induced obsessive-compulsive or related disorders; substance-induced sleep-wake disorder; substance-induced sexual dysfunction; substance-induced delirium; and substance-induced neurocognitive disorder (APA, May 2012a). Substance-induced dissociative disorder will be removed. A new class of drug-specific "not elsewhere classified" diagnoses will also be included (APA, May 2012a).

In addition to reorganization, the following represents newly named disorders: hallucinogen disorders; sedative/hypnotic-related disorders; and stimulant disorders. The proposed DSM5 will include the following disorders in the section of disorders that warrant further research for potential inclusion in future versions of the DSM: neurobehavioral disorder associated with prenatal alcohol exposure, caffeine use disorder, and internet use disorder (APA, May 2012a).

"Gambling disorder" will be transferred from the section of DSM-IV-TR Impulse Control Disorder Not Otherwise Specified to the DSM5 section of Substance Use and Addictive Disorder (APA, May 2012b). The criteria for diagnosis is much the same as in DSM-IV-TR with the exception of elimination of legal problems, a decrease of threshold of symptoms required for diagnosis the disorder from five or more criteria to four or more criteria, and inclusion of a 12-month period of symptom presence required to make a diagnosis (APA, 2000; APA, May 2012b). The diagnosis is proposed to include specifiers of episodic, chronic, or in remission. (APA, May 2012b)

The proposed DSM5 includes the addition of cannabis withdrawal as a diagnosis as well as criteria for diagnosing cannabis use disorder in DSM5. Based on the DSM5 website, the criteria to determine a true drug withdrawal syndrome consists of a cluster of symptoms that (1) are valid and reliably observed, (2) have a clear time course that includes onset closely following cessation of the drug and a return to baseline levels, (3) are pharmacologically specific to deprivation of the drug or one of its components, (4) are not rare among dependent users, and (5) are associated with clinically important consequences (APA, 2000; APA, Apr 2012b; Hughes et al., 1990). Published literature reviews suggest that cannabis withdrawal meets the criteria for a "true" withdrawal (Budney et al., 2004, 2006). The proposed criteria include requiring heavy or prolonged use of cannabis and the presence of three or more symptoms of withdrawal that occur within a week of discontinuation of cannabis use (APA, Apr 2012b). The most controversial aspect of including cannabis withdrawal in DSM5 and a factor that contributed to its omission in DSM-IV is the clinical significance of the withdrawal syndrome. Studies supporting the clinical significance of

the withdrawal syndrome by linking the syndrome to relapse risk, correlating symptom count and distress or impairment, and comparing severity of cannabis withdrawal and nicotine withdrawal syndrome (APA, Apr 2012b; Budney & Hughes, 2006; Budney et al., 2008; Vandrey et al., 2008).

Substance Use Disorders in Adolescents

There are concerns that the proposed changes in DSM5 do not address issues related to substance use during adolescence. The physiologic changes that occur during adolescence, as well as the changes that occur from "experimentation" to regular use, lead to questions regarding the validity of using "tolerance" as a criterion for diagnosis of substance use disorders during adolescence (Chung et al., 2004; Spear, 2002; Winters & Chang, 2011). Furthermore, more research is needed to examine the validity of craving in adolescents (Winters & Chang, 2011). The concerns regarding applying the two-symptom threshold for diagnosis include applying a stigmatized label of substance use disorder when the severity may be mild, more intermittent, and more likely to remit than the same diagnosis in the adult population. Withdrawal is also a fairly rare phenomenon in adolescents given the time course of use required for withdrawal to emerge, although in the few adolescents who report it, its presence may have relevance for prognosis (Winters & Chang, 2011). Concerns also exist that adolescents may misreport "hangover" effects as withdrawal symptoms, leading to false-positive symptoms (Chung & Maric, 2001). One proposal for addressing these concerns is to include a separate category of adolescent substance use as a way to address differences in this population compared with the adult population (Ray & Dhawan, 2011).

Substance Use Disorders in Elderly People

The elderly population is growing, and the number of older people who use illegal substances is increasing as well. Doctors in the United States are poor at diagnosing abuse of prescription drugs and alcohol among older individuals (Beynon, 2011; Boddiger, 2008). The sensitivity of the proposed DSM5 criteria in detecting drug use in the older population may need more research before the DSM5 is endorsed as a useful screening tool in this population (Beynon, 2011).

In summary, the DSM5 proposal includes changes in the nomenclature used to describe the pathology related to substance use through inclusion of the term "addictive" in the section title. This allows the inclusion of gambling in a section that previously held only substance-related disorders. Removing withdrawal and tolerance as criteria for diagnosing opiate use disorders in individuals receiving pain medications may prevent unnecessary labeling of patients and may change prescribing practices in this population. The addition of cannabis withdrawal as a diagnosis helps the DSM remain current with the latest available evidence. The addition of cravings and elimination of the legal difficulties in the criteria lists will likely change the focus of diagnosis, treatment, and research related to SUD. Changes to the diagnostic specifiers may alter the view of severity, remission, and treatment. Concerns continue that specific issues present in the adolescent and elderly populations are not reflected in the current proposal. The proposed changes indicate a

move toward recognizing addiction as occurring along a continuum of severity and that "abuse" is not separate from or necessarily antecedent to dependence. Ongoing research will help determine the impact these revisions will have on the field of addiction psychiatry and the focus for future revisions of the DSM.

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Chapter 2

Neurobiology of Substance Use Disorders

Antoine Douaihy and Jody Glance

Key Points

- Addiction is a neurobiological illness in which repetitive substance abuse dysregulates the circuitry of rewarding and adaptive behaviors resulting in a drug-induced neuroplasticity.
- Genetic predisposition, environmental factors, and changes in the brain's reward and stress systems contribute to the vulnerability for development of dependence and relapse in addiction.
- Understanding the neurobiological processes of addiction allows for a theoretical pharmacological approach to treating addictions.

Drug addiction, also known as substance dependence, is recognized as a neurobiological disorder whereby repetitive drug use dysregulates the normal circuitry of motivation, reward, and adaptive behaviors. This leads to neuroplastic changes in the brain, manifesting as a compulsion to seek and take the drug, a loss of control in limiting intake, continued use despite negative consequences, and persistent vulnerability to relapse even after an extended period of sobriety (Kalivas & O'Brien, 2008). There has been significant progress in the field of neurobiology, resulting from the application of new techniques ranging from in vitro molecular methods to brain neuroimaging procedures in subjects performing specific tasks. This chapter reviews the neurobiological processes involved in the various stages of addiction, with a focus on the changes associated with the transition from drug initiation to abuse and dependence and the vulnerability to relapse.

Addiction has been conceptualized as a chronic brain illness that progresses from impulsivity (acting without significant forethought) to compulsivity (excessively acting out repeated behaviors in an attempt to avoid distress). As one patient stated, "At first it was all about getting high, but then it became more about not getting too low." Addiction is a result of interactions among several variables in the context of repeated drug use, including biological factors such as genetic vulnerability. Addiction has a significant genetic component. In fact, approximately 40% to 60% of the risk for developing a substance use disorder is thought to be due to genetic heritability (Goldman, Oroszi, & Ducci, 2005; Hiroi &Agatsuma, 2005). The estimates of heredity include the percentage of the variance attributed to genetic factors by themselves as well as the percentage of the variance that is attributed to gene–environment interactions. Additionally, the presence of a psychiatric and/or medical illness, potency of the drug, mode of administration, and environmental and socioeconomic factors such as access and peer pressure have been implicated in the development of substance use disorders.

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Neurobiology of Drug Reward and Addiction

In order to understand the neurobiological processes of addiction, we review the underlying neurocircuitry and neuropharmacology involved in biologically rewarding behaviors, and then we focus on the various stages of addiction: drug initiation, progression to abuse and dependence, and vulnerability to relapse.

Neurobiology of Reward

Three major regions in the brain have been identified as mediating "natural" rewarding and adaptive behavior such as sex, food, and social affiliation (Figure 2.1): the nucleus accumbens (NAcc), mediating reward-related activities (positive valence); the amygdala (Amyg), involved in fear-motivated behaviors (negative valence); and the prefrontal cortex (PFC), responsible for decision making and the prediction of rewarding behaviors by determining salience attribution of environmental stimuli and regulating the intensity of behavioral reaction (Kalivas & Volkow, 2005). The core reward circuitry consists of an "in-series" circuit linking the ventral tegmental area (VTA), NAcc, and ventral pallidum via the medial forebrain bundle. This circuitry is believed to be functionally encoding the hedonic tone, attention, expectancy of reward, disconfirmation of reward expectancy, and incentive motivation. "Hedonic dysregulation" within this circuitry may lead to addiction (Gardner, 2011).

Neurobiology of Initiation of Addiction and Neuroplasticity

All drugs with addictive liability enhance (directly or indirectly, or even trans-synaptically) mesolimbic dopaminergic (DA) reward synaptic function in the NAcc (from the VTA to the NAcc). Drug self-administration is regulated by nucleus accumbens dopamine levels and is done to keep nucleus accumbens dopamine within a specific elevated range (to maintain a desired hedonic level). Although DA appears to be the primary mechanism of the initiation of drug reinforcement, other neurotransmitters have been also implicated indirectly in the acute reinforcing effects of addictive substances such as gamma-aminobutyric acid (GABA), opioid peptides, glutamate, serotonin, acetylcholine, and endocannabinoids. These neurotransmitters may work synergistically with the DA system or may work through independent pathways of reinforcement (Koob, 2008).

GABAergic interneurons provide an inhibitory feedback on the release of DA in the VTA and NAcc. The opioidergic system plays a modulatory role on the dopaminergic system most likely by inhibiting GABAergic interneurons that usually provide a tonic inhibition to the dopaminergic system in the VTA (Wise, 2003). Furthermore, the opioidergic system has been also implicated in the reinforcing effects of alcohol, and possibly cannabis, and may be involved with other impulsive/compulsive disorders such as pathological gambling (Grant, Brewer, & Potenza, 2006).

The cholinergic system from the pedunculopontine or laterodorsal tegmental nucleus provides excitatory input to the VTA, causing release of

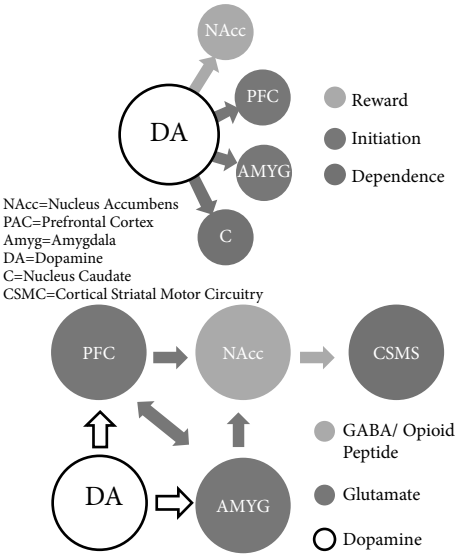

Figure 2.1 Mediators of reward and addiction. The nucleus accumbens, amygdala and prefrontal cortex are the three major brain regions involved in the establishment and perpetuation of addiction. Reinforcing effects of addictive drugs are mediated by neurotransmitters including dopamine, gamma-aminobutyric acid, opioid peptides and glutamate.

DA in the area of VTA-NAcc. Nicotinic cholinergic α and $4\beta_2$ receptors have been implicated in the reinforcing effects of nicotine (Heidbreder, 2005). It is possible that serotonergic (5HT) compounds potentially modulate the mesolimbic DA system (Walsh & Cunningham, 1997). Regarding the endocannabinoid system, the cannabis type 1 (CB1) receptors mediate the reinforcing effects of cannabinoids that facilitate the release of DA in the NAcc. Activation of the endocannabinoid system may be implicated in the motivational, DA-releasing and reinforcing effects of many drugs of abuse. As a result, CB1 antagonists/inverse agonists represent a potential class of medications targeting the treatment of addiction.

Excitatory glutamatergic input from many cortical structures in the brain facilitates DA release in the VTA and NAcc. This explains paradoxically how certain NMDA antagonists such as phencyclidine exert their reinforcing effects. In addition to the addictive liability of some NMDA antagonists, others may be associated with antiaddictive properties in humans, including memantine in alcohol and opioid use disorders and acamprosate for alcoholism (Krupitsky et al., 2007; Littleton, 2007). The relative balance or ratio of NMDA blockade to enhanced glutamate transmission (a function of dose, route of administration, and potency at the receptor) may explain

why some NMDA antagonists are more reinforcing than others and why some of them may have greater antiaddictive properties (Ross, 2008). Substances of abuse are able to markedly elevate the levels of NAcc DA to supraphysiological levels for a significant period of time, leading to a dysregulation and corruption of the initial process of reward processing. The hedonic nature of the substance does not predict the addictive liability. For example, nicotine has greater addictive potential in humans than even intravenous heroin or cocaine, leading to a dependence syndrome in one third of people versus one fourth of people for intravenous heroin and cocaine, despite the fact that the subjective effects of nicotine are much less euphorigenic then either heroin or cocaine (Anthony, Warner, & Kessler, 1994).

In addition to the factors described above, addiction is also a disease of neuroplasticity. The essence of the addiction continues long after the last dose of the drug, often lasting for years (O'Brien, 2009). Neuroplasticity is manifested by compulsive drug-seeking behavior. Substances that directly activate the reward system may produce learning that diverts the individual to those behaviors that repeat the drug-induced feelings of reward. The DA release caused by a drug of abuse tends to be greater than that of natural rewards, and will continue to increase with repeated exposure rather than diminish (as is the case with natural, expected rewards) (Schultz, 1998). This pharmacologically induced, enhanced, and maintained DA increase relative to biological stimuli causes more significant learned associations with environmental stimuli, and the brain gets the message that drug-related cues are more associated with reward than biologically relevant ones (Hyman, 2005). This "overlearning" of drug acquisition behaviors greatly contributes to the initiation of an addiction cycle, and may explain the enhanced vulnerability to craving and relapse by cue-induced environmental triggers (Kalivas, 2007).

Evidence of the plasticity that occurs with the development of addiction can be identified by brain imaging studies that show rapid activation (increased blood flow to reward pathways) when drug-related cues are shown to addicts who have been free of drugs for at least a month (Childress et al., 1999). The strength of the craving reported by an addict during brain reward system activation is related directly to the amount of endogenous dopamine released in reward structures, as measured by displacement of labeled raclopride in positron emission tomography (PET) studies (Volkow et al., 2006).

Transition from Reward to Addiction

In the transition from abuse to dependence, all major drugs of abuse, and particularly alcohol, powerfully dysregulate the brain "stress" system by increasing corticotropin-releasing factor (CRF), an effect that may have important implications for understanding the neurobiology of addiction and relapse. During the development of dependence, there occurs both a change in the function of neurotransmitters with the acute reinforcing effects of drugs of abuse (dopamine, opioid peptides, serotonin, GABA) and an involvement of the brain stress system neurotransmitters (CRF and norepinephrine) and dysregulation of the neuropeptide Y brain antistress system. Taken together, activation of these brain stress systems

contributes to the negative emotional state associated with acute abstinence and withdrawal states and to the vulnerability to stressors seen in protracted abstinence and relapse; therefore, CRF1 antagonists may represent a new class of antiaddictive medications.

Drug addiction progresses from occasional recreational use to impulsive use to habitual compulsive use. This correlates with a progression from reward-driven to habit-driven drug-seeking behavior. The neurocircuitry shifts from a DA-based behavioral system to a predominantly glutamate-based one, continuing to rely on the influence of DA release (see Figure 2.1). This behavioral progression correlates with a neuroanatomical progression from ventral striatal (NAcc) to dorsal striatal control over drug-seeking behavior.

The three classical sets of reinstatement paradigms (craving and relapse triggers) are (1) drug priming, (2) stress, and (3) reexposure to environmental cues (conditioned cues: people, places, things) previously associated with drug-taking behavior. Drug-triggered relapse involves the NAcc and DA. Stress-triggered relapse involves (a) the central nucleus of the Amyg, the bed nucleus of the stria terminalis, and the neurotransmitter CRF; and (b) the lateral tegmental noradrenergic nuclei of the brain stem and the neurotransmitter norepinephrine. Cue-triggered relapse involves the basolateral nucleus of the Amyg, the hippocampus, and the glutamate system. In the reinstatement paradigms, DA release in the PFC and Amyg stimulates glutamatergic transmission between the PFC and Amyg and glutamate release in the pathway from the PFC to the NAcc core, constituting a final common pathway for initiating drug-seeking behavior (Kalivas, 2007).

A core part of the executive dysfunction is related to two important structures: the orbitofrontal cortex (OFC) and the anterior cingulate gyrus (ACG). Impairment in the OFC would be predicted to result in impaired decision making and drug craving, whereby drug-related cues would be erroneously deemed to have greater salience value than natural reinforcers. An important role of the ACG is the inhibitory control of behaviors and a decrease in the activity of ACG, rendering people with addictive disorders unable to control urges to get the drug (Volkow et al., 2004). In addition, genetic and environmental factors can contribute to vulnerability to any part of the dysregulation of neurocircuitry during the development of dependence.

Addiction Circuitry Model

Dr. Nora Volkow from the National Institute on Drug Abuse (NIDA) has proposed a useful model integrating all previously discussed overlapping circuitry that incorporates the following four pathways: (1) primary reinforcing effects of drugs of abuse and neuroplastic changes with memory formation in the mesolimbic DA system from the VTA to NAcc; (2) conditioned learning of drug-related stimuli in the Amyg and hippocampus (Hip); (3) motivation, drive, and regulation of emotional responses and salience attribution in the OFC, with DA neurons projecting from the VTA; and (4) cognitive and executive inhibitory control functions of the PFC and ACG (Baler & Volkow, 2006) (Figure 2.2). These neural pathways are modulated by the DA system and interact with each other through

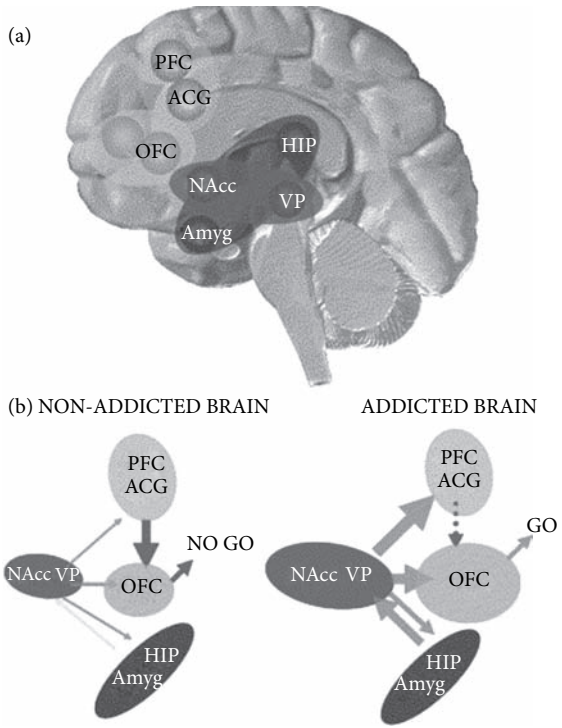

Figure 2.2 (**a**) Addiction circuitry. Hypothetical model of addiction as the result of impaired information processing within the reward network. (**b**) Compared with the nonaddicted state (*left*), the salience value of a drug (*red*) and its associated cues (*purple*) is enhanced in the addicted state (*right*), whereas the strength of inhibitory control is weakened (*blue*), setting the stage for an unrestrained motivation (*green*), favoring a positive-feedback loop (GO vs. NO GO), and resulting in compulsive drug-taking without regard to potentially catastrophic consequences.

GABAergic and glutamatergic connections. The transition to addiction involves neuroplasticity in all of these structures that may begin with changes in the mesolimbic DA system and a cascade of neuroadaptations, and eventually a dysregulation of the PFC, ACG, and brain stress systems.

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Chapter 3

Psychological Aspects of Substance Use Disorders, Treatment, and Recovery

Michael Flaherty

Key Points

- Although substance use disorders (SUDs) are conceptualized as a chronic, relapsing medical illnesses, they remain most often treated as acute illnesses with specific treatment episodes.
- Successful treatment is based on proper assessment and the availability of resources and time to treat the illness over its course.
- Using the transtheoretical model of change helps individualize patients' treatment plan based on their readiness to change, improved level of motivation to change, and real-world application of that motivation.
- The process of natural recovery and assisted recovery are connected to each other in many ways, and formal treatment can facilitate the process of attaining and sustaining either.
- Motivation for change is a reliable predictor of success in treatment and is strongly influenced by interpersonal interactions of the client with the treating clinician, supportive others in recovery, the family, and the community where the person lives.
- Brief screening and interventions and motivational interviewing (MI), motivational enhancement therapy (MET), and medication-supported treatment (MST) are helpful in assessing and facilitating behavior change in patients with SUDs, particularly in early acuity (MI) and chronic severity (MET, MST).
- A key in early treatment is placing the patient at the right level of needed care for the right length of time; the appropriate level of care should be based on the American Society of Addiction Medicine *Patient Placement Criteria for the Treatment of Substance-Related Disorders*.
- Four major dimensions define recovery: health, home, purpose, and community.
- Recovery can be strengthened by continued post-treatment check-ups and linkage of the individual and family from the very beginning with recovery support programs and peers in recovery from an addiction.

Substance use, misuse, and addiction represent one of America's foremost health problems and the largest *preventable* health problem in our society today. Based on data from emergency department visits, the use and abuse of prescribed medications now equals or exceeds the use of illicit or street drugs, the number of deaths related to drug poisonings have more than quadrupled since 1990, and drug overdose deaths are now the second leading cause of unintentional deaths in America (Califano, 2009; CESAR Fax, September 19, & May 23, 2011). Nearly 80% of those in prison are there as a result of a substance use–related crime (IOM, 2006). Nearly 70% of the cases in a local Children and Youth Services agency are from families with substance use problems; 800,000 babies are born annually with a passive substance involvement; 25% of children live in a family in which substances are abused; 20% of 10th graders have used an illicit substance in the past month; 6.5 million Americans use illicit substances while working; and 1 in 5 older Americans now struggle with a

substance use disorder outside of any formal treatment (IOM, 2012, IRETA, 2011). Beyond the estimated 21 million Americans reporting using drugs (age 12 years and older) (SAMHSA/NSDUH, 2010) who need treatment, White (2012) identifies that there are an estimated 25 to 40 million Americans estimated now in recovery (not including those in remission from tobacco) who also may need continuing care or support at all levels of medical care.

Definitions

Users of alcohol or drugs may show a variety of patterns of use with varying adverse affects. *Drug use* refers to the use of a medication or illicit substance without a prescription, without a legitimate need for it, or without medical oversight. *Drug abuse* or misuse refers to repeated or excessive drug use or noncompliant medication use.*Problematic use* refers to the use of a licit substance in amounts greater than normal for gender, age, and so forth (e.g., beyond 14 drinks a week for an adult male, 7 drinks a week for an adult female) (Babor & Higgens-Biddle, 2001).

Dependence was sometimes used to refer to a more psychological need (without physical withdrawal or characteristics) created for a substance but is today more often used synonymously with dependency on *medications* (i.e., they will likely have physical withdrawal symptoms if they suddenly stop taking their *medication*). The term is not meant to be pejorative in any sense. All dependence has some physiological basis, but with dependence, the cravings may appear more psychological than physiologically evident. *Addiction* is defined as a collection of symptoms that may include physical dependence, but the definition requires other behavioral symptoms indicating loss of control over use, exacerbation of problems because of use, and continued use despite negative consequences. Addiction is a chronic relapsing disease characterized by compulsive drug-seeking and abuse and by long-lasting chemical changes in the brain (NIDA, 2002). In the recent American Psychiatric Association *Diagnostic and Statistical Manual of Mental Disorders,* 5th edition (DSM-5) "Substance Related and Addictive Disorders" replaces dependence and abuse. However the understanding of all definition scan still be helpful to clinicians.

Another language distinction is between "drug use" and "medication use." Drugs are typically used to alter or enhance reality. Medications are intended to help an individual participate in reality or life—*not to escape it.* This is a distinction critical in assuring persons in recovery that indeed they may need medications and that their recovery is no less valid because of the presence of them. The intent of use is more critical.

Cost and Effects of Substance Use

The cost of illicit substance use and the related problems to our society is estimated to be $184.6 billion for alcohol abuse and $143 billion annually for drug abuse (Mark et al., 2005). Indeed, given all the related societal costs, it can be argued that screening, assessing, intervening, and properly treating SUDs presents the single greatest potential cost savings in health care to our society. In this calculation, the author includes the actual costs of health care, to productivity, to communities, to criminal justice, to the families of those involved, and to the noncompliance with other health needs by those abusing or addicted to substances, including alcohol, drugs, medications, and tobacco.

Today only 10% to 15% of individuals with SUDs receive professional help (SAMHSA, 2007). When clinical care is provided, it needs to accurately assess the origin of the presenting illness, its nature as a substance use problem (e.g., when, why, how used, how long), any co-occurring mental health issues, the drugs of use (i.e., type and whether prescribed or illicit), and the severity of the illness to complete proper patient matching and level of continuing care.

Despite many unintended societal consequences, only when addiction is perceived and defined as an illness is it treated as such. Sadly, adequate treatment depends on the availability of clinical skills, available resources, and the patient and practitioner having the time and motivation needed to treat and manage the illness properly over time. Too often, incarceration, repeated hospitalization, or death becomes the alternative.

Macro Psychology of Addressing the Disorder

Perhaps nothing negatively affects our ability to properly understand and treat SUDs more than our society's continued denial and minimization of the true magnitude of the problem; our rationalization of its full impact (e.g., the true societal costs or not seeing SUD as the root cause of at least 20 other major medical illnesses, and the related medical comorbidity costs from the condition itself); or the failure of no treatment (i.e., incarceration or death, with family and community devastation); or the futile projection of blaming other problems for it (e.g., poverty, racism, social epidemic, moral failure, poor individual choices, poor economy). This being said, we will now focus on the clinical presentation and psychological aspects of each phase of use.

Our current understanding of addiction and SUDs is that they are illnesses best comprehended as not being acute in nature (e.g., like a cold or a broken arm) but rather as being more chronic in nature and best approached clinically, appreciating that potential, even if not evident at the very moment (Dennis & Scott, 2007; Flaherty, 2006; McLellan et al., 2000; White & McLellan, 2008). As such, substance use and SUD can be treated with methods adapted from a chronic disease model of care in which life-world interventions are conducted earlier to prevent or minimize occurrence and, when needed, with accurate assessment and treatment of acuity and with continuing care—often for years—if only ultimately with self-care. As with diabetes, hypertension, HIV, and depression, SUDs are best addressed from within a chronic illness framework that can offer the best reduction of harm for all through enhanced prevention, earlier intervention, treatment, and continuing care to sustain remission and ongoing recovery—the addiction *continuum of care.*

Often problematically, our treatment systems and payment methodologies remain more acute in their financial support with limited, reactive, and restrictive episodes and units of care often addressing the most medically demanding issues to the neglect of earlier intervention, early treatment, and continuing care. Although addiction is "conceptualized as a chronic, progressive disease" (Flaherty, 2006; McLellan et al., 2000; White, 1998), it remains too often treated as an acute illness with time-specific treatment episodes in acute models and episodes of care. In recent years, major shifts in our understanding of the nature of the illness and the value of early screening, assessment, and urgent and continuing treatment of it have emerged that will eventually redefine new financial methodologies to effectively support addressing the illness at any point in its trajectory and for the time needed to be effective.

Coincidental to this paradigm shift in understanding the illness and its treatment, our understanding of the neurobiology of addiction has exploded. Other key advancements have been made in the relevance of genetics, family history, and culture in understanding potential "predisposition" to the illness and assessing a person's true vulnerability to it. All these factors must be considered in a thorough assessment of the problem for each individual. In summary, addiction and dependence are often

defined as a "biopsychosocial" illness (Donovan & Marlatt, 1988; Glantz & Pickens, 1992). Others, particularly those in recovery themselves, add or see "spiritual" aspects unique to this illness, such as faith, regained purpose, or even lost and found meaning in life, making it a biopsychosocial *spiritual* illness.

Individual Psychological Aspects of Treatment and the Transtheoretical Model of Change

Science provides a number of proven evidence-based practices applicable for all levels of individual use of substances. Most encompassing is DiClemente and Prochaska's (1998) transtheoretical model (TTM) of intentional behavioral change, which has stood for more than two decades as a proven cornerstone to understanding how a person can become both aware and well again. The TTM respects the person-centered nature and unique starting point of care.

Using the TTM, a person-centered, individualized treatment plan can be formulated. TTM attempts to bring together the diverse etiological perspectives (e.g., socioenvironmental, educational, genetic and physiological, biological, personality, intrapsychic, conditioning and reinforcement) brought forward over time. TTM focuses on how individuals change behavior and how they can progress through such change by identifying key change dimensions involved in their progress (DiClemente & Prochaska, 1998). TTM sees a common personal pathway, in addition to the type of person or environment, as the best way to integrate and understand the multiple influences involved at whatever level of acquiring or halting problematic use or addiction. Beginning and sustaining use involves the individual and his or her unique choices. The choices are influenced by both character (personality) and social forces. There is an interaction between the individual and the risk and protective factors that influence whether the individual becomes addicted and whether he or she engages recovery. According to DiClemente and Prochaska (1998), the acquisition of the awareness of an addictive behavior and recovery from it require a personal journey through intentional or desired change and levels of change summarized below. Each practitioner must assess where the individual is in his or her present awareness of the problem and then, beginning with that knowledge, assist or *motivate* the patient to intentionally process and change his or her behavior accordingly. The effect of the drugs must also be considered in assessing a patient's ability to actuate his or her will. Patients can and do move back and forth between these stages in either direction, and can even do so throughout the course of one session. The stages of change are as follows:

1. *Precontemplation*—the stage at which there is no intention to change behavior in the foreseeable future. Many individuals in this stage are unaware of or minimize their problems. This maybe because the person has never regarded the behavior to be a problem and thus sees no need for change. It may also be that the person has tried to change and did not succeed and feels resigned and not willing to trying again.
2. *Contemplation*—the stage in which people are aware that a problem exists and are seriously thinking about making a change within the next 6 months but have not yet made a commitment to take action. People are typically ambivalent and can remain stuck, weighing pros

and cons of the problem and its solution, for long periods without internal or external motivation to change.
3. *Preparation*—the stage that combines intention and behavioral criteria for planning action. Individuals in this stage are intending to take action in the next month. Such actions can include the reduction of use and movement toward abstinence. Although they have made some reductions in their problem behaviors, individuals in the preparation stage have not yet reached a criterion for effective action. They are intending to take such action in the very near future.
4. *Action*—the stage in which individuals modify their behavior, experiences, or environment in order to overcome their problems. Although obvious to the person and practitioner, actions must not be equated with change unless the altered addictive behavior is sustained from 1 day to 6 months. Successfully altering the addictive behavior means reaching a particular goal, such as abstinence or other markers of recovery.
5. *Maintenance*—the task here is to hold onto and continue gains through action leading to a consolidation of the change.

Process of Natural Change

Addressing the problematic pattern of substance use is a complex process. Multiple factors appear to moderate the development of the addiction and interfere with entering and/or exiting the problematic use process. For example, there is limited evidence that simply starting to smoke or drinking alcohol is a gateway for other substance use. In fact it is the early onset of *illicit* substance use and the e*scalation* of that use that are more strongly associated with both abuse and dependence on alcohol and drugs in later life. These factors include the age at which an individual starts the problematic use, family behaviors and genetic influences, relationships and social network systems, and cultural and moral values. Clearly there are social and interpersonal influences that can foster problematic use or problem discontinuation. For example, the self-change process is promoted by shifts in social support networks that might involve family, friends, and places of use while taking more responsibilities (reducing problematic alcohol use).

The process of natural change is affected by multiple factors, including environmental, developmental considerations, and access to resources. For example, individuals acknowledging their homosexual identity can engage in heavy drinking. This pattern of drinking can change without the involvement in formal treatment once the individuals realize the problematic aspect of their drinking. The natural change appears to be related to maturation in individuals who have the capacity, personal factors, and less problematic environment that facilitate the exiting from the problematic use early on in their lives. Another associated factor that fosters the progression of substance use and affects natural change is the co-occurrence of mood or anxiety disorders. The individuals who struggle with these disorders early in adolescence or young adulthood have more difficulty controlling their substance use that becomes linked to their psychiatric problems and make natural change of their problematic use less likely to happen. There are no consistent differences between individuals who were able to self-change and individuals who are treatment seekers. Several studies of self-change have included individuals with long histories of addiction who have been able to achieve complete abstinence even without involvement in formal treatment or mutual help groups (White, 2006; White & Kurtz, 2006). It is evident that for individuals with severe SUD, the process of self-change is more challenging but not impossible. Treatment usually interacts with the process of self-change and can facilitate the process of natural recovery. The processes of natural recovery and assisted recovery are connected to each other in many ways, and this connection is not clearly conceptualized. Promoting natural recovery could be done with the use of brief interventions that take advantage of naturally occurring circumstances and negative consequences or that deliver a short therapeutic encounter with personalized feedback, encouragement, and advice.

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Motivational Processes in Substance Use Disorders

Concept of Motivation

Motivation is a multidimensional phenomenon with interchangeable dimensions such as problem recognition, desire or willingness, pros and cons of change, perceived need or importance of change, and perceived ability or self-efficacy for change. One way of operationalizing motivation is as behavior probability. There is no scientific support whatsoever for these perceptions that individuals with SUDs have a particular "addictive" personality or exhibit high levels of immature defense mechanisms such as denial. It is clear that low motivation is not an intrapersonal trait of individuals with SUDs, and the attributions of low motivation to interpersonal pathology are not empirically based. A patient's motivation for change is considered both an intrapersonal and interpersonal process and is clearly influenced by an "empathic" approach by the practitioner. One study found that the physician's rates of dropout were predictable from the physician's "tone of voice" when talking about "alcoholic" patients: the more anger in the physician's voice, the higher the patient dropout rate (Milmoe et al., 1967). The concern of significant others can also influence the change process negatively or positively. The socioenvironmental context also considerably reinforces or deters change. For example, in a randomized trial, patients were either encouraged to attend Alcoholics Anonymous (AA) or were linked with an AA member who offered to take them to a meeting. The corresponding percentages of patients attending a first AA meeting were 0% and 100%.

Dimensions of Motivation

Five categories or dimensions of motivation were identified by Amrhein et al. (2003), referred to with the acronym DARN/C:

1. *Desire*. Individuals use the language of "wanting" to change or "wishing" to change; this reflects one's level of desire for change.
2. *Ability*. This is the person's perceived ability to change (self-efficacy; Bandura, 1997), reflected in such language is "I can stop using" or "I could stop using."
3. *Reasons*. The person expresses the reasons to make or not make a change. These reasons include the pros and cons of change and the pros and cons of the status quo.
4. *Need*. The person verbalizes his or her level of need to change or not change, reflected in such language as "I really should stop using" or "I don't have to stop using." The language of need expresses some degree of urgency.
5. *Commitment language*. Of all these dimensions, only committing language is predictive of subsequent behavior change. Commitment is the final pathway to change. Strengthening change talk (desire, ability, reasons, and need) increases the likelihood of commitment language and subsequent behavior change. Such language includes "I will go to my therapy session"; "I know I will attend AA meetings"; "I intend to stop smoking." Behavior change also potentially occurs when the

individual articulates a clear intention and a specific plan of action. The commitment language is negotiated in the therapeutic encounter.

Ways to Influence Motivation

Multiple approaches in the treatment of SUDs have demonstrated no beneficial effects on substance use behaviors, such as knowledge-based education, insight-oriented persuasion, punishment, and confrontational approaches. There is a strong scientific evidence for brief interventions, motivational interviewing, and motivational incentives. In this chapter, we address brief interventions and motivational interviewing (MI); motivational incentives.

Brief Interventions

Research also has shown that there is strong and consistent support for the efficacy of brief interventions. Brief intervention is a form of treatment. It usually compromises one to a few sessions, of a few minutes to an hour long. What accounts for the impact of these interventions is not the duration of the session. Brief interventions do not use education, confrontation, or teaching of specific skills. The main goal of the brief interventions is to activate the patient's own self-regulatory processes (Vohs & Baumeister, 2009). Therefore, brief interventions can instigate behavior change in patients with SUDs. The components of brief effective interventions for alcohol and drug problems have been summarized using the mnemonic acronym FRAMES (Miller & Sanchez, 1994):

- *Feedback*: This includes information about the individual's drug or alcohol use and problems from screening or assessment, information about personal risks associated with current use, and general information about the risks of continued use. If the patient's presenting problem is related to the substance use, it is important to provide this link in feedback. Feedback often valuably contains comparisons between the patient's use and science, biology, and the problems experienced by similar people in the population.
- *Responsibility:* A key factor in working with substance users is to acknowledge that they are responsible for their own behavior and that they can make choices about their substance use. Key phrases such as, "What you decide about what to do with your substance use is up to you" and "nobody can make you change or decide for you" help the user retain personal control (or measure the lack of it) of his or her behavior and responsibility for the consequences of that behavior.
- *Advice:* Individuals are often unaware of the link between their use and the problems or harms associated to it. Providing clear advice that cutting down or stopping substance use will reduce their risk for future problems will increase their awareness of their personal risk while maintaining their responsibility in doing so. Such clear advice is the central component of therapeutic intervention with substance users.
- *Menu of alternative change options*: Providing a variety of possible ways to achieve the sought changed behavior allows the patients to choose which strategy is most suitable for their situation and which they feel might be most helpful. Providing such choices reinforces the sense of personal control and responsibility for making change while

simultaneously strengthening the individual's motivation for change. Some examples might be:
Keeping a diary or record of use (where, when, how much, why, who with)
Helping patients design their own recovery plan
Identifying high-risk situations and ways to avoid them
Engaging in non–substance use activities with friends, support groups, exercise, work, and so forth.
Providing information about self-help supports and connecting to them
Offering access to the therapist available if urgent need arises

- *Empathy:* An empathic approach is fundamental to the delivery of the brief intervention.
- *Self-efficacy (confidence)*: A reasonably reliable predictor of change is self-efficacy. The final FRAMES component is to encourage the patients' confidence that they are able to make the sought changes in their substance use. Those who believe they are able to use ways to make a change are more successful.

Brief interventions can be implemented in diverse settings. A brief intervention can be used as a single session or as an initial session, or it can be incorporated within a particular treatment approach over a series of sessions. It can also be used to strengthen adherence to treatment and used in combination with pharmacotherapeutic interventions (Pettinati et al., 2004; Zweben, 2002).

Motivational Interviewing

MI is a person-centered, collaborative form of guiding the person to elicit and strengthen motivation for change (Miller & Rollnick, 2002). The MI approach facilitates change through exploring and resolving ambivalence, which is the main motivational obstacle to seeking help. The outcome literature for MI is growing, and the overwhelming evidence is in the areas of addictions. MI has been conceptualized as having two major components: a relational and a technical component (Miller & Rose, 2009). The relational component focuses on the therapeutic alliance, with emphasis on accurate empathy (Rogers, 1957). The technical component focuses on eliciting change talk and strengthening commitment language (Glynn & Moyers, 2010). The "spirit" of MI is defined by three components: collaboration, evocation, and supporting autonomy. Collaboration means working together with the patient; evocation means calling forth the patient's strengths and motivations and intrinsic resources; and supporting autonomy means respecting the patient's decisions, emphasizing the importance of self-determination theory (Deci & Ryan, 2008). MI focuses on evoking the patient's motivational language (DARN) and ultimately a commitment language. Instigation to change starts when the patient perceives an inconsistency between his or her present state and his or her desired own goals and values. Fundamental to the MI approach is the use of micro skills that include open-ended questions, affirmation, reflective listening, and summaries (OARS) to facilitate the change process. OARS is a brief way to remember the basic approach. There is much more to MI, and its effectiveness in gaining the involvement of the person in care cannot be overstated. For more details on the MI approach, see www.motivationalinterview.org and www.mitrip.org.

Other Science-Based Treatments

Other evidenced-based practices have also been proved more effective in treating drug abuse. *Motivational incentives* use strategies to encourage rapid and self-driven behavior change to stop drug use and help the person enter and continue in treatment. Bus passes, coupons for food, and even just participating in a patient fish-bowl lottery for home supplies have been shown to be effective in initiating the motivation of a person to try. When the incentive accomplishes its task of getting the person to treatment, treatment can begin the process of building the motivation for care and making it more internally rooted for the person. This practice has been shown to be particularly effective in high-acuity, high-relapsing, and financially challenged populations (Morgenstern et al., 2009). The "internalization" of treatment's value is critical for sustained recovery and can be evidenced when the patient declines the earned "incentive" or gives it to another, more needy person.

More recently, *cognitive behavioral therapy* (CBT) is again emerging as an effective practice to help patients recognize, avoid, and cope with the situations in which they are most likely to abuse drugs. Historically seen as an effective measure to prevent relapse (Daley & Marlatt, 1997), cognitive therapy is now being used to reorient the person's thinking from just addressing the pathology to building constructive thinking in recovery. By reframing the person's thinking from past failures, from fear and "I can't" to "I'll try," "let's do this," and "here's in someone who can help you with your recovery," the negative thinking is diminished, and positive thinking can take hold to resist use (Beck, 2012; Flaherty, 2012) and build daily recovery. In this sense CBT can strengthen the opportunity for recovery, which itself strengthens the value of treatment by making treatment more applicable to felt success.

Today the use of medication in treatment is more widely accepted and a proven practice. Referred to as *medication-assisted treatment* (MAT) or, by some in recovery, as *medication-supported recovery* (MSR), the use of prescribed and monitored medications is generally accepted as another valued and proven evidenced-based practice. The use of medication was once viewed as failure or at best as a replacement for illicit use but not recovery. Today, as noted in the above definitions paragraph, these medications are defined as "medicine" that, when managed properly, can help the individual attain personal recovery whether continuing on the medication or not. A fuller definition of recovery will be discussed shortly, but it is now defined by many factors in a person's life—and not only use of medication or not, or even complete abstinence or not. Examples of such supportive medications might be the treatment of opiate dependence with naltrexone, buprenorphine, ormethadone; co-occurring psychiatric disorders with appropriate psychotropic medications; alcohol dependence with antagonist or motivating medication, such as disulfiram, naltrexone, acamprosate, or topiramate; and smoking with nicotine replacement. Because they work on different aspects of addiction, combinations of behavioral therapies and medications generally appear to be more effective than either approach used alone. Additionally, the recognition of the added value of recovery supports and a recovery focus in care has provided even more tools to improve outcomes and will be discussed momentarily.

In sum, three decades of scientific research and clinical practice have yielded a variety of effective approaches in treatment. The previously noted TTM of change, enhanced by the key evidenced-based practices, represents one proven approach and practice. Other findings and practices also have much to offer. These findings in aggregate have been integrated into an overarching guide by the National Institute on Drug Abuse (NIDA) called the "Principles of Drug Addiction Treatment—A Research-Based Guide" (NIDA, 2009). These integrating principles are listed in Table 3.1.

Treatment programs should assess patients for the presence of HIV/AIDS, hepatitis B and C, tuberculosis, and other infectious diseases as well as provide targeted risk-reduction counseling to help patients change behaviors that place them at risk for contracting or spreading infectious diseases.

Table 3.1 Principles of Effective Treatment

1.	Addiction is a complex but treatable disease that affects brain function and behavior.
2.	No single treatment is appropriate for everyone.
3.	Treatment needs to be readily available.
4.	Effective treatment attends to multiple needs of the individual, not just his or her drug problem.
5.	Remaining in treatment for an adequate period of time is critical.
6.	Counseling, including individual and/or group and other behavioral therapies, is the most commonly used form of drug abuse treatment.
7.	Medications are an important element of treatment for many patients, especially when combined with counseling and other behavioral therapies.
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.
9.	Many drug-addicted individuals also have other medical disorders.
10.	Medically assisted detoxification is only the first stage of addiction treatment and by itself does little to change long-term drug abuse.
11.	Treatment does not have to be voluntary to be effective.
12.	Drug abuse treatment must be monitored continuously because lapses during treatment do occur.

From National Institute on Drug Abuse. (2009). *Principles of drug addiction treatment: A research based guide*. Washington, DC: National Institute of Health, U.S. Department of Health and Human Services.

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Psychology of Treatment and Recovery

During this early phase of assessment and care, patients are often frightened of both the physical complications of their illness (e.g., withdrawal, cravings, potential seizures, possible arrest) and the stigma of being identified as an alcoholic or addict. Working privately with the person or bringing in family or significant others to support care can be helpful but is a decision the clinician must make in collaboration with the patient. Research has proved the increased effectiveness of both bringing in one's family to support the individual (Rotgers, Morgenstern, & Walters, 2003) and using peers or recovery supports to augment care and reduce stigma (White & Kurtz, 2006). In addressing the illness and its treatment, investigators (Hser & Anglin, 2011; Moos, 2006; White, 2008, 2006) have noted that on average it takes a person seven attempts in the current, more acute model before attaining a1-year period of sustained abstinence. Further research documents that in the current delivery model, nearly 80% of those completing formal treatment relapse with the first 90 days if not receiving continuing or follow-up care (NIDA, 2009; White, 2008). By connecting the patients to proven treatments at the right level of care and with the added support of family, employer, and others in recovery, the number of attempts can be significantly reduced while improving the likelihood of achieved and sustained recovery (Humphreys, 1997, 1999; Laudet, 2002; Moos, 2006, 2007; White, 2006).

A key in early treatment is to place the patient at the right *level* of needed care. A placement at a level below medical necessity will likely bring failure, increase patient despair, add medical morbidity, and possibly lead to eventual mortality. A placement in too high a level of care can result in a rejection of the appropriateness of care and the advancement of the illness to that higher level. Precise placement at the right level of care is key for optimal outcome. The American Society of Addiction Medicine (ASAM) has published guiding *Patient Placement Criteria for the Treatment of Substance-Related Disorders* (PPC-2R; Mee-Lee et al., 2001) with an update planned for late 2013. These criteria are for both adult and adolescent populations and include placement guidelines for people with both single and co-occurring mental and substance use disorders. The PPC assesses each patient along six clinical dimensions, matching those individual dimensions to 15 potential levels if care. The six *clinical dimensions* are as follows:

1. Acuity and/or withdrawal potential
2. Biomedical conditions and potential complications
3. Emotional, behavioral, or cognitive conditions and complications
4. Readiness to change
5. Relapse, continued use, or continued problem potential
6. Recovery environment

Based on these dimensions, the 15 potential *levels of* care are as follows:

1. Ambulatory detoxification without extended onsite monitoring: I-D
2. Ambulatory detoxification with extended onsite monitoring: II-D
3. Clinically managed residential detoxification: III.2-D

4. Medically monitored inpatient detoxification: III.7-D
5. Medically managed inpatient detoxification: IV-D
6. Early intervention: 0.5
7. Outpatient services: I
8. Intensive outpatient: II.1
9. Partial hospitalization: II.5
10. Clinically managed low-intensity residential: III.1
11. Clinically managed medium-intensity residential: III.3
12. Clinically managed high-intensity residential: III.5
13. Medically monitored intensive inpatient: III.7
14. Medically managed intensive inpatient: IV
15. Opioid maintenance therapy: OMT

A fuller understanding of each level and what it provides is necessary to properly use any PPC guide and achieve optimal patient outcome. Individuals often move through levels from medical stabilization to rehabilitation and recovery as health improves. Also, detoxification, whether I, II, III, or IV D, is seen only as achieving patient safety and/or medical stabilization and, by itself, is not considered substance use treatment. The following provides an example of using the adult ASAM criteria:

> John, a divorced 34-year-old businessman, is assessed in your outpatient practice as having severe alcohol dependence with occasional marijuana use and the use of prescribed sedatives "to sleep." He also has had a history of heart problems for which he receives treatment and is being monitored by his physician. While having a 16-year history of progressive drinking, he has not tried alcohol or drug treatment before but now must or "lose his job." He reports after a brief trial on his own that he could not even go one day without drinking. You apply a Clinical Institute Withdrawal Assessment for Alcohol Scale (CIWA-Ar) and obtain a score of 14, indicating moderate to severe withdrawal symptoms. In your assessment, you that conclude John needs a fuller medical assessment, detox, and medical stabilization before beginning actual alcohol recovery treatment. Given his length of use, his current dependence (CIWA-Ar score), and his history of heart problems, you do not see outpatient detox (ASAM level 1-D or II-D) as appropriate or safe. You recommend level IV-D, medically managed inpatient detoxification, where John's coronary status can be monitored throughout the detoxification process by medical staff, who are constantly present at this level of care. After his detoxification is safely completed, you recommend he consider going to a clinically managed medium-intensity residential treatment program (level III.3) followed by an intensive outpatient (level II.1) program in his local community before returning to you for continuing and ongoing outpatient care (level I). The length of time in each level will be determined by his progress and the

clinical judgment at each level in consultation with you. John resists spending this much time off work for treatment, but after a brief authorized discussion with his boss, he relents to "give it a try," given both the medical urgency and employer support. You also contact his managed care organization to assist in their providing authorization for the recommended treatment plan and related care management.

In making the above patient placement, medical safety and stabilization had to come first. After this was established, the central psychological goal of this early period of assessment and treatment was the John's *acceptance* of his substance use problem and his motivation to change. Many patients will minimize or "half-step" that understanding into a kind of "compliance" to temporarily buy time and peace. Some will find other problems or excuses and project the focused clinical attention elsewhere. Changing this addictive thinking or what patients think about or how they may minimize the consequences of their use (e.g., using CBT and insight therapy or MI) can help them reframe their understanding of the true personal impact of their use and increase their motivation and resolve to quit. The patient's true acceptance of the full problem is necessary, even after abstinence, for recovery to begin. Such acceptance or "surrender" is not easy, but achieving compliance or abstinence for the sake others is a barrier to ultimate recovery. In the act of true acceptance, individuals see or surrender to the problem honestly, accepting their role in the problem and acknowledging the actions by which they will find a "sense of unity, of ended struggles, of no longer divided inner counsel" (Tiebout, 1953). Working with a therapist or peer can add to breaking down this denial, minimization, and projection while forging an allied team to address the problem and build recovery.

Beyond addressing personal denial or minimization, a psychological assessment of other key clinical obstacles must also include determining whether the person's emotions (e.g., fears, needs) are dominating the person's cognitive or personal regulatory control in any way or whether these long and powerful conditioned impulses might need to be unlearned or held in check. Here, responding to positive rewards or incentives (e.g., MET), including the relationship with the therapist and peers, might strengthen the motivation for treatment while diminishing less thoughtful habitual acts (e.g., seeing bad *people*, going to bad *places,* or doing bad *things*) and impulses. Assessing any other addictions is critical because patients will often "cross" use to other substances (e.g., alcohol to sedatives) or behaviors (e.g., cocaine use to gambling) in their use and recovery. Life trauma assessment is major. For many, the effects of drug use can be a severe trauma that needs to be worked through in treatment. The often-related drug lifestyle of violence, sex, or crime must eventually be a topic of treatment if recovery is to be sustainable. Veterans and victims of sexual assault and abuse and those suffering with post-traumatic stress disorder or traumatic brain injury are a distinct group in whom the assessment and treatment of the trauma is itself as critical as the effort to attain abstinence and recovery. Left unchecked, it will undermine treatment.

The rule is that in psychological treatment dealing with a traumatized population and its high rate of suicide, "trauma trumps all," lest we just remove the individual's coping mechanism (use) while opening the person to re-experiencing that trauma outside a safe environment without any coping mechanisms. Treating both the addiction and the trauma simultaneously and with great caution is the ideal path.

Co-occurring mental health issues also need to be assessed at intake and once medical stability is attained. In early recovery, most individuals will need to focus on their recovery from addiction; however, if other mental health problems and psychological issues become evident, they too must be clinically included lest they also undermine the person's effort at recovery. Some psychological issues may simply clear or recede once recovery has progressed over 6 months or a year. Some, however, will manifest more strongly as recovery progresses and may have been the self-medicated target of the patient in his or her illicit use. The patient may in fact be a person with mental illness who is abusing drugs. In some true anxiety disorders, cautious use of mood-moderating medications can help if closely monitored and not used in an attempt by the person to simply sustain his or her physical addiction or potentiate the euphoric effect of other use. Withdrawal itself causes anxiety, as do many life events aroused by treatment. Differentiation of anxiety from addiction withdrawal is at best a science in early development. Today, best clinical practice would suggest to the clinician to expect and rule out co-occurring psychiatric diagnoses and psychological issues in *all* clients. Additionally, when such co-occurring diagnoses are found, they should be treated concurrently with monitored, appropriate medication and psychotherapy as warranted.

SAMHSA's Center for Substance Abuse Treatment TIP No. 42 (2008) is an excellent guide to the assessment and treatment of co-occurring disorders as well as an excellent reference for other scholarly works in this area.

Because abstinence from the addictive or abused substance is often essential for success, the psychological treatment of substance use has emphasized more the resolution of current issues, conflicts, and barriers than the dwelling on childhood experiences, developmental conflicts, and fixations—often the focus of psychoanalysis or psychodynamic psychotherapy. Substance dependence will not disappear on its own through understanding. Still, some patients may need and benefit from these more in-depth processes after medical and chemical stabilization have been achieved. In this chapter, however, we have outlined a treatment approach based on the TTM of change, in which treatment helps the person move along the stages of change to recovery. So often, the psychological devastation and the physical domination of the addiction reduce the person's ability to simply halt use or the related pathology. By increasing self-awareness and self-perception, we build the motivation of the person to get well, and then, by connecting that motivation to an understanding of the illness and others who have had it, we build an enormous new foundation for the treatment of the illness and its pathological nature as well as for remission and recovery. By building success, we reduce the odds of the illness and add to the strengths of the person to sustain that success. In short, we rebuild the capabilities and confidence of the person first.

After medical stabilization is achieved and compliance with treatment is attained—and a recovery plan has been designed—the individual can state that he or she is in *early* recovery. The role of treatment is to provide the opportunity to attain wellness and the tools to sustain that wellness and recovery over time. Although many more individuals achieve "recovery" outside of formal treatment than within it, formal treatment is still necessary for many, particularly those suffering from increased medical severity of the illness, co-occurring psychiatric disorders, pregnancy, or other acute or chronic medical conditions. Recall that only 11.2% of the 22.6 million people who need substance abuse treatment receive such treatment in a specialty facility (SAMHSA, 2007). Additionally, for those who do access treatment, remission and recovery are rarely attained in a single episode or as a linear event. The process to achieve remission or stabilization of the illness and a quality of life measured by individual wellness and attained management and/or recovery from illness is the goal of treatment. Sustained recovery is a process focused more on the individual and is often seen as a lifelong responsibility (like other chronic illnesses) that may need further support professionally in both nonspecialty (e.g., physician, health center, medical home) and specialty medical settings, such as those noted in the ASAM levels of care.

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Recovery

As the treatment goals take hold, recovery begins. As previously noted, the ultimate goal for each individual is the attainment and sustainment of wellness and personal recovery. Although treatment is often the platform that makes recovery possible, it is rarely the place where sustained recovery is born. Recovery is more than abstinence or remission of illness. Recovery is attained and sustained in the world of the person. Given the chronic nature of addiction and its treatment, the very definition of recovery from the illness has been expanded from simple abstinence and improved health to the attainment of individual progress of recovery *outcome measures* such as the following (White, 2008):

1. Reduced alcohol or drug (AOD) use and adverse consequences
2. Improved living environment
3. Improved physical health and reduced health care costs
4. Improved emotional health
5. Improved family relationships and family health
6. Citizenship (legal status, education, employment, community participation, community service)
7. Quality of life (spirituality, life meaning, and purpose)

At this writing, there are two still evolving definitions of recovery:

1. Recovery is a voluntarily maintained lifestyle characterized by sobriety, personal health, and citizenship (Betty Ford Institute Consensus Panel, 2007)
2. Recovery from mental disorders and/or SUDs is a process of change through which individuals improve health and wellness, live self-directed life, and strive to reach their full potential. There are four major dimensions that support a life in recovery (*Substance Abuse and Mental Health Services Administration, website, April 10, 2012):*
   - *Health:* overcoming or managing one's disease(s) or symptoms—for example, abstaining from use of alcohol, illicit drugs, and nonprescribed medications if one has an addiction problem—and for everyone in recovery, making informed, healthy choices that support physical and emotional well-being
   - *Home*: a stable and safe place to live
   - *Purpose:* meaningful daily activities, such as a job, school, volunteerism, family caretaking, or creative endeavors, and the independence, income, and resources to participate in society
   - *Community*: relationships and social networks that provide support, friendship, love, and hope. White (2012) estimates that today in America there are some 25 to 40 million (excluding those in remission from nicotine dependence alone) adults in remission from significant alcohol and drug problems. Of those, only 17.9% retained the absence of clinical conditions through a strategy of complete abstinence. Most recovery is reached through insight, behavioral change, and attaining or building the previously noted seven "improvements" in one's life with less severe, less complex, and less prolonged problems than those who actually enter the treatment system. Recovery is a change in lifestyle, and for

> many whose illness is severe, treatment is necessary to attain it. White further reports an attained average remission/recovery rate at 5 years of about 46% to 50%, with about 30% maintaining abstinence while others continue in life with some use—but at subclinical levels.

In recovery-focused care, a key for the practitioner is to engage each individual and family in a timely manner and at their precise level of need at treatment entry, using the tools of exact screening and assessment, stages of change (e.g., TTM), proper treatment matching or placement (ASAM guidelines), and motivational interventions (e.g., cognitive therapy, CBT, MAT, MET) to keep them working at their improved health. Treatment and sustained recovery can often take years. Because of this, addiction treatment outcomes too often become compromised by the lack of ongoing care and support for sustained or long-term recovery. For most, sustained recovery is generally achieved after three or four episodes of care over multiple years (Anglin, Hser, & Grella, 1997; Dennis et al., 2005; Grella & Joshi, 1999), often referred to an *addiction career*. More than half of all post-treatment relapses occur within the 30 days of discharge from treatment (80% within 90 days of discharge) (Hubbard, Flynn, Craddock, & Fletcher, 2001). This reality has led to the perception that addiction treatment is a "revolving door" whereby individuals are cycled through treatment after treatment, criminal justice, and hospitals; 64% of those entering treatment today have had prior treatments that did not work (DASIS, 2002). Worse, only one in five patients actually receives postdischarge continuing care (Dennis, Scott, & Funk, 2003) to address this long-term need related to a chronic condition.

In the psychology of building recovery, the client's recovery capital must be assessed. *Recovery capital* comprises all the personal, social, and community resources that can be brought to bear on the initiation and maintenance of an individual's recovery (Granfield & Cloud, 1999). Each person's recovery capital is different. Although most patient placement classification systems rely primarily on problem severity and pathology, recovery capital brings the resources (if present) of the individual—and of the community (community recovery capital)—into all decisions and placement (see Table 3.2).

Using Table 3.2, an individual with high to moderate problem severity might typically warrant inpatient placement of some duration. However, if that person brings high levels of recovery capital, he or she may initiate and sustain recovery at much lower levels of care, or may stay in inpatient or residential care for less time and need lower intensity post-treatment monitoring. In contrast, an individual at early stages of addiction with many vulnerability factors (e.g., present severity, family history of substance use problems, early age of onset, traumatic victimization) and extremely low personal recovery capital who also lives in a community lacking significant recovery support resources may warrant placement at a higher level of care and require higher intensity and longer post-treatment care and support.

Once placed in treatment with a full assessment of both severity and recovery capital, recovery can be strengthened by continued

Table 3.2 Problem Severity/Recovery Capital Matrix

High recovery capital	High problem severity/complexity
Low problem severity/complexity	Low recovery capital

From White, W. (2008). *Recovery management and recovery-oriented systems of care: Scientific rationale and promising practice.* Pittsburgh, Chicago, Philadelphia: Northeast Addiction Technology Transfer Center, Great Lakes Addiction Technology Transfer Center, Philadelphia Department of Behavioral Health and Intellectual disAbility Services.

post-treatment (recovery) check-ups (McKay, 2005; Scott & Dennis, 2011) and linkage of the individual and family from the very beginning with recovery supports or peers who often have attained their own recovery (Moos, 2011). This linkage is to those who can support the individual's (and family's) attainment of recovery and is not to any particular fellowship or organization such as AA, Narcotics Anonymous, Al-Anon, or S.O.S. WIR. This support person may be a recovery specialist or mentor, recovery school or dorm or roommate, recovery center, family navigator, care manager, volunteer, or other nonclinician or peer who is experientially familiar with the community's services (e.g., transportation, employment, outreach, housing, relapse prevention, and other support services) and who is able to be more assertive in helping the individual during and after the acute phase of treatment. Recovery support services are social vehicles for recovery that operate in conjunction with formal treatment or other existing mutual aid or fellowship groups (CSAT, 2007), such as recovery centers, recovery dorms, recovery employment centers, family recovery centers, and recovery mentors. Along with treatment management, *recovery management* is a new philosophy of organizing treatment and recovery supports to enhance early engagement, treatment compliance (if in treatment), recovery initiation and maintenance, and the quality of personal and family life over the long term (White, 2011). *Recovery-oriented systems of care* are the networks of indigenous and professional supports designed to initiate, sustain, and enhance the quality of long-term addiction recovery for individuals and families and to create values and policies in the larger cultural and policy environment that are supportive of these recovery processes (White & Kelly, 2011). Such combined professional and experiential support is showing significant improvement in attained and sustained recovery while being less costly both in the short and long term (Evans, 2011; Kirk, 2011; Laudet, 2013).

In addressing substance use disorders in treatment, the patient would be asked to design his or her own *recovery plan* to work alongside the formal treatment plan. A recovery-focused treatment plan addresses more than the elimination of symptoms from an unchanged life; it is about regaining wholeness, connection to one's community, and a purpose-filled

life. What positive attainments can assist the person's change and health? Although most treatment addresses the illness, recovery-focused care builds a pathway to recovery from the illness and wellness. As the positive aspects of one's life grow, the negative hold of the addictive life loosens. As one example for treatment, Dr. Aaron Beck, a founder of Cognitive Behavioral Therapy (CBT), is advancing *recovery-oriented cognitive therapy* (CBT-R), in which he is applying the technology of cognitive therapy to the negative moods and pathological thoughts of patients to address their lack of motivation, unhealthy sociality, negative expectations, and illogical thinking, with noted results of improved trust in treatment, empowerment of the person, restoration of hope, increased motivation, improved social integration, and overall satisfaction with treatment (Beck, 2012). These early findings are confirmed in studies from six countries (including the United States) using recovery-focused treatment that noted improved outcomes and reduced costs by connecting the person to recovery supports, peer supports, fellowships, and the attainment of recovery goals. This is particularly of value for an illness whose length of needed attention may be longer than formal treatment and whose wellness is best attained and sustained in the community where one lives.

Recovery does not always begin in a clinical or treatment setting. Most recovery happens outside of and even without professional treatment (DeLeon et al., 2006; Valliant, 1983; White, 2006). Such recovery achieved without professional or mutual aid assistance is often referred to as *solo* or *natural recovery* and is a viable pathway for shorter and less severe substance problems and for those with more stable social and occupational supports (Larimer & Kilmer, 2000; Sobell et al., 1993; White, 2006). *Natural recovery* or using one's own intrapersonal and interpersonal resources (family, knowledge, kinship, social networks, medical intervention) may be the most common pathway to recovery. When professional treatment is involved, it is referred to as *treatment-assisted recovery*; when mutual aid or peers are involved, it is *peer-assisted recovery*. Styles of recovery are not mutually exclusive. Surveys (White, 2006) have indicated that about 65% of those in AA have had some professional treatment before or while in AA. In a 2001 national survey of people who self-identified as "in recovery" or "formally addicted to" alcohol or other drugs, 25% reported attaining and sustaining their recovery without ever receiving treatment or mutual aid or fellowship support (Faces and Voices of Recovery, 2001).

Combining treatment of the illness while building wellness or recovery in life has been suggested as the "new medical model" (Barber, 2012; Flaherty, 2012). Recovery-oriented care parallels the move in other specialties toward person-centered care. Recovery may find remission of the illness—*cure*; it may involve symptom control or long-term monitoring of the illness by both doctor and patient—*recovery with illness management*; or it may involve functioning at one's best despite ongoing symptoms of the illness—*personal recovery*. This is not a new philosophy and is the same embraced by the disability rights movement, by cancer survivors, and by people with mental illness (Deegan, 1993) and other chronic conditions. In short, treatment today is optimal when it addresses both the pathological nature of the illness and the strengths of those ways to attain

recovery from it. An example of using both professional treatment and recovery-focused care follows:

> Mary is a 42-year-old physician who comes to your practice (ASAM level I) seeking help for what she describes as growing alcohol use. In your assessment you determine she has had a chronic history of recurrent depression, including six episodes of electroconvulsive therapy and the ongoing support of a psychiatrist for medication and therapy. She reveals that she is currently taking fluoxetine, 40mg daily; naproxen, 500 mg twice a day as needed; ziprasidone, 160 mg at night; clonazepam, 1 mg twice a day; bupropion SR, 200 mg daily; alprazolam, 0.25 mg twice daily; and lamotrigine, 200 mg daily. She described her alcohol use as one or two drinks daily after working a long day in a local community health center. Her cognitive abilities seem good, but she expresses concern that by seeking help she may be jeopardizing her living. She is also concerned that altering her medications might cause a reoccurrence of the depression. Consultative reports from both her employer (also a physician) and her treating psychiatrist indicate confidence in her patient practice and judgment. Mary has a family history of alcoholism in both parents and in a younger brother. She also evidences symptoms of adult child of alcoholics syndrome (e.g., extreme caretaking, selflessness) but of never having treatment for it despite having several prior therapists. She asks you to evaluate her alcohol use and suggest a plan for her to follow on an outpatient basis that does not reignite her depression. Considering the multiple Axis I diagnoses—ethanol dependence and historical recurrent bipolar depression—and the medications in use and the delicate balance of her depression, you suspect Mary may be self-medicating or potentiating her sedative use through her drinking. You suggest a hospital assessment with rehab to follow, but she declines. She also declines AA for fear of being recognized and because of past negative experiences with it. Using her caretaking motivation, you suggest a week without drinking to assure you, her patients, and herself that she has the "control" she professes to still maintain. She agrees to try. You add that you would like her to speak confidentially over coffee with another female physician (peer support) who is in recovery over the week to "explain the ins and outs unique to physicians in treatment and recovery." Again, Mary appeals not to do this for fear that person might overstate her case and be reported to the state licensing board. She asks to try just outpatient therapy with you. You assure her that this one visit will not lead to being reported, especially if she isn't drinking. With

Mary's permission, you set up this meeting. You conclude by telling Mary that if she cannot quit drinking, she should call you sooner. You ask her husband to join your session and assist you and Mary in this plan. He does.

One week later, Mary reports to you that she was able to quit drinking entirely for 3 days but then returned to drinking even more (two to four drinks daily) heavily over the weekend. She also added that she took an old Vicodin to help sleep on Saturday and Sunday evenings. She did meet with the female physician in recovery, and that helped. On the admission of her expanded alcohol use, the added opioid abuse, her own despair and multiple Axis I diagnoses, and her patient care you insist on a hospital-based (ASAM levels IV and III.5) evaluation and treatment. Over an extended session, she agrees and ultimately expresses relief. She has in mind the same facility that Dr. X, her peer-support coffee partner, went to because it seemed to provide good medical care and could help manage her depression while dealing with her substance dependence. Mary's husband (family support) concurs, her employer concurs, and her treating psychiatrist concurs. Mary is relieved of her clinical duties immediately and enters level IV detox and then level III.5 rehab 3 days later.

Six weeks later, Mary returns from the residential treatment facility with all medications removed except ziprasidone at night and lamotrigine each day. She has had no alcohol for the past 42 days and is off all sedatives. She had mild withdrawal, mostly from the sedatives, but is coping and glad to be off them. She must now recognize her psychological and social triggers and continue in care regularly to sustain this recovery. She now agrees to go to AA—"I need to." She attended a meeting every day in rehab. Dr. X. has offered to meet with her as a recovery support once a week and serve as a temporary "sponsor," taking her to some meetings. Her employer has agreed to offer more supportive oversight and to change Mary's patient work to nonalcoholic and nonaddicted persons "as best we can" over the next 6 months. Mary's own "recovery plan" calls for her to join Caduceus (society of physicians caring for physicians) and to attend one meeting or recovery-focused activity each day for 90 days. She must have formal therapy at least weekly and participate online with a recovery support network established by the rehab for 90 days. Mary is relieved, and her depression is not reoccurring. She again feels like a whole person and a doctor. She feels her family's full support and must now work at sustaining this recovery in her community, work, and life.

Conclusion

The treatment of substance abuse and dependence remains one of society's most perplexing – and expensive - clinical challenges. In one moment, it seems so simple to say, "just quit it" and follow the guide of others. In the next moment, it opens up to all of the complexity of an ambivalent society over use, pleasure, legality, medications, iatrogenic addiction, and the equally strong complexities that each individual brings to that use and their recovery. Treatment always reflects the values and knowledge of the society at the time and, in the case of SUD treatment, the resources of that society and of the individual, and the very payment methodology in place (e.g., in-plan or not, fee for service or case rate, insurance or not, authorized or not) to address the illness before us. No other health condition has so many involved in determining care. The conscientious clinician must always keep this in mind and work not only clinically but also in the realm of what needs to and must be done to achieve medical safety, stabilization, and an opportunity for attained wellness and recovery in *each* case.

Addiction or substance dependence is first addressed by establishing a *relationship* with the patient that allows for truth, trust, and intervention at the point at which the patient presents and with the knowledge of what is needed to succeed. The person will almost always evidence some degree of denial, minimization, rationalization, and resistance to whatever is first presented, but that is where the work begins and the relationship starts. Interestingly, the magnitude of these protestations often parallels the severity of the illness.

Addressing the pathology alone, however, is not enough for treatment. When hope is gone, victory cannot be had only by removing the symptoms. Building a solid treatment plan on a thorough assessment of the person's readiness to change stage and using the evidence-based practices proved to address the pathology are crucial—but only half of the job. Adding to that plan the vision and hope of recovery connected to the supports of one's family, friends, community, and other attainments strengthens the impact of treatment with each step of recovery. Recovery is a change of lifestyle and may consume a lifetime.

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Chapter 4

Socioenvironmental Aspects of Substance Use Disorders

Marilyn Byrne and Laura Lander

Key Points

- A thorough evaluation for substance use disorders (SUDs) includes an assessment of biological and environmental family history.
- Genetic makeup, environment, and the "addictiveness" of the drug all influence the development of SUDs or provide protective factors against the development of SUDs.
- Family and concerned significant other (CSO) involvement in treatment should be incorporated in the individualized treatment plan.
- Family and CSOs should be encouraged to adapt their involvement depending on the patient's stage of change and recovery.
- Ethnic and racial groups have individualized risk and protective factors.

Substance use disorders (SUDs) take place in a context. In this chapter we look at the varied sociocultural and familial systems that influence the development of SUDs as well as their maintenance and treatment.

Urie Bronfenbrenner (1979) developed the concept of the social ecological model. This model is a theoretical framework in which human development is viewed as being influenced by external contexts in the larger spheres of our social and cultural world. The relationship between individuals and the contexts in which they live is reciprocal in nature. These contexts influence individuals' sense of self and place in the world, and in turn individuals influence the contexts in which they live. This theory divides the larger system in which we function in into four parts known as *contexts* or *environments*: macro-, exo-, meso- and micro-systems.

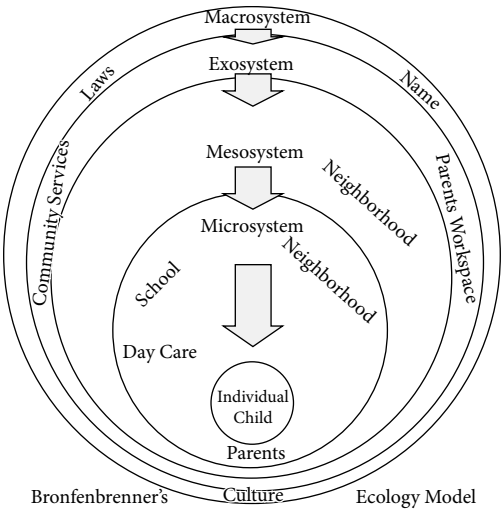
The *macro-system* refers to the global context in which we live. Influences in this arena include our ethnic heritage, the cultural influences in the country where we reside, technology, laws, the media, and political and religious ideology. This context can be seen as a "societal blueprint" of a particular culture. An example of macro-system influence is the French tradition that wine is served as part of a meal, normalizing its use rather than having it represent a mood changer.

The *exo-system* refers to the influences of the community in which we live. This includes workplace influences and the culture and density of the community in which we live, such as the impact of living in an urban versus a rural setting. An example of exo-system influence is an urban environment in which there is high unemployment, furthering the use of illegal behaviors for making a living.

The *meso-system* includes influences of the specific group, such as religious institutions, schools, neighborhoods, and sports teams with which people are directly involved. An example of meso-system influence is a religious tradition that teaches that drinking is wrong.

The *micro-system* influences are the family, teachers, coaches, friends, personal biology, and personality. An example of micro-system influence is peers exposing others to experimentation with illegal drugs at a young age.

Each of these spheres affects the expression and maintenance of SUDs. Each layer of influence also holds information about what can positively or negatively influence the success of treatment for SUDs. For example, if an individual is addicted to carisoprodol (Soma) and finds that she can


Macrosystem
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Name
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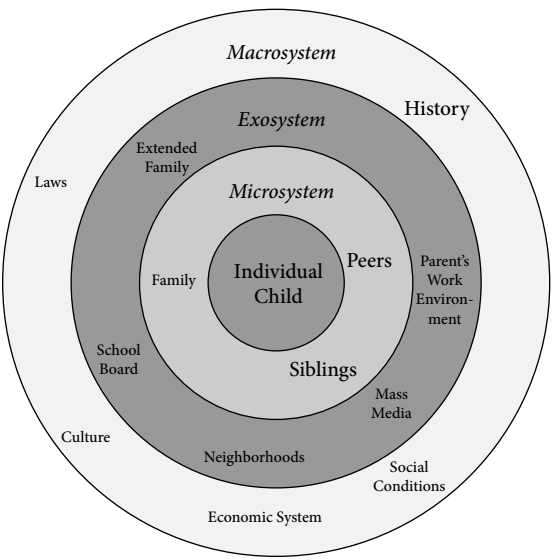
School
Day Care
Individual Child
Parents
Culture
Bronfenbrenner's
Ecology Model


Macrosystem
History
Exosystem
Extended Family
Laws
Microsystem
Peers
Family
Individual Child
Parent's Work Environ-ment
School Board
Siblings
Mass Media
Culture
Neighborhoods
Social Conditions
Economic System

obtain this medication legally over the internet without a prescription, this is an example of the macro-system affecting her SUD by increasing the availability of her drug of choice. Alternately, if a young man grows up attending a Pentecostal church and identifies as homosexual, he may experience stigma and rejection by the religious institution to which he belongs. This affects him at the meso-system level. His response may be to engage in alcohol abuse as a way to cope and feel accepted and part of a social network that does not see him as a sinner. These influences can give the clinicians insight into what kinds of interventions might be most successful.

A second theoretical model important to understanding how the socio-environmental aspects of SUDs affect the individual is general systems theory. The two theories are complimentary; Bronfenbrenner's social ecological model identifies the parts of the larger system in which we all live, whereas general systems theory focuses on how the parts of the system interact with one another. General systems theory had its origins in biological science (Bertalanffy, 1968). Key concepts in this theory are *feedback* and *homeostasis*. Feedback refers to the circular way in which parts of a system communicate with each other. For example, in a family system, the wife may identify that she drinks excessively because her husband ignores her and she is depressed. The husband may in turn state that he avoids his wife because she is always drinking and sad. Each person's behavior becomes reinforcing feedback for the other *Homeostasis*. refers to the idea that it is the tendency of a system to seek stability and equilibrium (Brown & Christensen, 1986). For example, a wife may cover up her husband's drinking by making excuses to friends and to his boss for his moodiness and missed work days to try and prevent him from losing his job because such a loss would significantly affect the stability of the family. Her efforts enable his substance abuse to continue with limited consequence, but keep the family system at relative equilibrium without negative impact from the exo- and meso-systems.

Family systems theory is a specific example of a system that fits within the framework of general systems theory. The primary understanding of family systems theory holds that when treating an individual you are actually working with that individual in the context of the family constellation whether that individual is an adult or a child. Family systems theory actually goes as far as saying that the individual presenting in your office is merely the expression of the pathology found in the family system. Family systems theory developed in the late 1960s and early 1970s. Salvadore Minuchin, Murray Bowen, Carl Witaker, and Nathan Ackerman were highly influential figures in this movement and its application to psychiatric treatment. The idea that individuals cannot be fully understood or successfully treated without first understanding how they function in their family system is central. Individuals who present in our offices are seen as "symptomatic," and in this theory their pathology would be viewed as an attempt to adapt to their family of origin so as to maintain homeostasis. Although that adaptation may keep the family system in a state of equilibrium, as in the example of the wife covering up her husband's drinking, it maintains the problem. The idea of homeostasis is key in that each family member must function in such a way that keeps the whole system in balance even if it is not healthy for specific individuals in the family.

Impact of Substance Use Disorders on the Family System and Members

It is estimated that more than 8 million children younger than 18 years live with at least one adult who has an SUD. This is more than 1 in 10 children. Most of these children are under the age of 5 years (U.S. Department of Health and Human Services [DHHS], 2009). Studies of families with SUDs reveal patterns at the micro-system level that significantly influence the development of personality and the likelihood that a child will develop an SUD. In addition, we know that children of parents with SUDs are more likely to have poor school performance, depression, and delinquency (Gfroerer & De La Rosa, 1993; Gross & McCaul, 1991–1990; Johnson et al., 1989; Moos & Billings, 1982; West & Prinz, 1987). The negative impacts of parental SUDs on the family culture include disruption of rituals, roles, routines, communication, social life, and finances. Families in which there is a parental SUD often foster an environment that is characterized by secrecy, loss, conflict, violence or abuse, role reversal, and fear.

Patients with SUDs cannot be understood and treated effectively without consideration of the impact of the family. All persons influence their social environment and in turn are influenced by it. Family systems researchers have confirmed the reciprocal relationship between the disorder of SUD and the environment. Not only does an individual affect his or her surrounding systems, but also individuals and their surrounding systems mutually influence each other (another example of feedback). The family, representing the micro-system, consequently must be factored into the understanding of the disorder development, maintenance, and efforts necessary for successful ongoing recovery.

In this chapter we also address important considerations of family and culture across stages of SUD. Identifying stages of the SUD and corresponding family involvement demonstrates not only that the disorder progresses but also that the family response has a predictable pattern in that progression. Identifying this pattern is useful in formulating plans for intervention. Starting with genetic influence and proceeding to stages of experimentation, use, disorder emergence, recognition, and acceptance of the disorder state, and finally through treatment and recovery, there are considerations for the health practitioner at each stage.

Although much of the work around family and SUD has focused on the role the family plays in the patient's acceptance, treatment, and maintenance of change, the impact of the SUD on the family members merits attention in and of itself. Each family member is uniquely affected by outcomes including but not limited to difficult feelings related to the disorder process, economic hardship, unmet developmental needs, and violence being perpetrated against each of them. For offspring there is also an increased risk for becoming alcohol or drug abusers themselves. Thus, treating only the person with the active SUD is limited in effectiveness. From a community health standpoint, treating the individual only has limited impact in that much of the devastation of the disorder of alcoholism is ignored. From an individual health standpoint, treating the individual without the family limits the effectiveness because it ignores the systemic supports for change or homeostasis.

Substance Use Disorder and Family Influence

No single factor determines whether a person will develop an SUD; rather, three broad risk factors contribute. Biology and genetic makeup, the environment, and the addictive qualities of the drug, and the drug's route of administration constitute the three major risk factors contributing to the development of an SUD (NIDA, 2007).

It is estimated that 40% to 60% of a person's vulnerability to the disorder is accounted for by genetics, suggesting that a family history of SUD is a necessary element in patient evaluation (NIDA, 2007). Children of alcoholics are between four and nine times as likely to develop alcohol use disorders (Straussner & Fewell, 2006). In the assessment process, clinicians should inquire about generational patterns of SUD and mental disorders.

In addition to the genetic component, the home environment influences the development of the disorder in multiple ways. Early exposure to use by family members or others increases a child's risk for problems with SUD. Research shows that the earlier children use substances, the more likely they are to progress to serious abuse or dependence (Lynskey et al., 2003). Because the prefrontal cortex, the center of decision making and emotional control in the brain, is still developing during adolescence (Gotay et al., 2004), introducing drugs at this time has profound and enduring consequences.

Apart from genetics and the physiological impact of early use, the family environment provided by caretakers with SUDs provides unstable and inconsistent living conditions, inadequate caretaking and supervision, and exposure to violence. A chaotic home and the lack of emotional or physical supervision and abuse or violence increase the risk for early use of substances by offspring. Children of alcoholics and drug addicts are also at risk for other mental health problems, which in turn increases their risk for development of SUDs. Peer and community attitudes coming from the meso- and micro-system levels shape beliefs and patterns of experimentation and early use. On the other hand, a functioning family that offers a secure, cohesive, mutually supportive environment with appropriate roles, effective communication, family routines, and expression of positive affect provide for protective factors against the development of addictive disorder (Straussner & Fewell, 2006).

In the evaluation process, it is important to assess both the risk factors and the protective factors. For example, having a father who is an alcoholic and is abusive toward his son introduces genetic and environmental risk factors, while that same child may have protective factors such as strong bond with a geographically close grandparent and regular involvement in a church group with positive peers and routine positive adult modeling and emotional connection.

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Family and the Substance Use Disorder Development Stage

Much of the early literature (Brown & Lewis, 1999; Jackson, 1954; Steinglass et al., 1987) regarding the process of family adjustment and coping with an active SUD recognizes stages that speak to (1) recognition of disorder development, (2) discontinuation of use, (3) treatment and early recovery, and (4) ongoing recovery.

In the beginning family members often resist change in many ways. There can be alternating recognition/labeling and resistance to recognition of SUD-related behaviors. The family hopes that the escalating symptoms are just a stage or a passing response to situational events. During this phase the family members may try to cover up, knowingly or unknowingly enabling and denying substance use as an issue. For example, a spouse may at times experience anger and fear, attempt to stop use by a spouse or child, and cover over problematic outcomes, while at other times believing that the use is not a problem. At times denial can be as strong within the family as it is in the person with the SUD. Family members may accommodate substance use and its outcomes to the extent that they actually inadvertently support use. The hope for normalcy allows the family to ignore danger signs, defending themselves from fears and their loved one from external judgments and consequences. These efforts are an example of homeostasis in the family system.

When the family system has accommodated the SUD and its behaviors, it becomes more rigid and closed. Counter-intuitively the preservation of the unhealthy system supersedes the needs of the individual family members, including children and adults (Steinglass et al., 1987). Having made a series of adjustments to cope with the presence of an SUD in the family, the family can demonstrate a high degree of stability. It is in this first stage that we see the emergence of what is popularly known as *enabling*. Grasp of this concept is essential to understanding the development of the disorder process. The word "enable" usually implies a helpful process, one that suggests a relationship between an action and a positive outcome. In the SUD process, enabling results in negative outcomes. Enabling is the interference with personal or societal consequences of the disorder of SUD, which inadvertently contributes to its continued development. Examples of enabling include providing money that might be used for alcohol or drugs, paying fines related to use, bailing the family member out of trouble, or keeping secrets regarding the scale of the use of alcohol or drugs. Appreciation of the co-evolutionary nature of the system allows one to see enabling and denial on the part of family members as adaptive and protective of the family system, whereas denial on the part of the patient is protective of the ongoing disorder process.

Implications for the Clinician: Stage 1—Recognition of Disorder Development

- Always assess the family history of SUD (alcohol or any drug dependence).
- Include concerned significant others (CSOs) in the evaluation when possible and assess the family member's acceptance of disorder state; elicit family members' perceptions of the problem.
- Examine discrepancies between a patient's and others' perceptions of the use and related problems.
- Inquire about age of initiation of use of alcohol and drugs.
- Educate the patient and CSOs about three major risk factors: genetics, environment, and the drug of abuse and route of administration.
- Educate specifically about drugs of abuse being prescribed and their addictive potential.
- Educate CSOs about denial and enabling; avoid labeling when discussing these concepts.
- Help CSOs articulate the impact of the patient's use on them.

Family and Its Impact on Discontinuation of Use

Change can occur when there is recognition by some part of the system that there is a problem. Recognition and acceptance of the disorder and its associated behaviors emerge when at least one person in the family recognizes the problem and gives rise to a hope for change. At this stage, there is instability in the family and disequilibrium in the system, which is uncomfortable for individuals within the system but which increases the possibility for change.

The transition from the active using and disorder development phase to discontinuation of use is usually brought on by some negative event or loss. Social consequences (job problems, illnesses, child problems, or legal problems) can be significant motivators to treatment. It is when the pattern of use and accommodation of use become destabilized by negative occurrences at the micro-, meso-, exo- or macro-system level (such as threats of relationship loss, accidents and employer warnings or job threats, police or legal involvement) that an individual or a family member may reach out for help or be receptive to a clinician's suggestion regarding the need for treatment. If the person with the addictive disorder refuses treatment, the family members nevertheless should be encouraged to seek more information or treatment for themselves or attend family self-help programs. Even if the person with the SUD refuses treatment at this point, family members can be educated about their behaviors that contribute to the stabilization of the disorder process. These behaviors are often referred to as "enabling" and are best seen as learned patterns intended to improve the situation and stabilize the family system while in actuality allowing the disorder process to flourish.

Clinicians can be helpful at this stage even if the person with the addictive disorder is not yet ready to engage in change. They can help family members (1) recognize the impact of the disorder on each of them, and (2) increase their awareness of enabling behaviors. In some instances family members can be educated to take a very active position in confronting the family member with the necessity of treatment. Originally promulgated by the Johnson Institute (Johnson, 1998) and more recently popularized by television, interventions by family members can be successful in moving the alcoholic or addict to active treatment. An intervention (a detailed accounting of the impact of the SUD with a proposed plan of action regarding the need for treatment and stated consequences if the person involved does not accept treatment) can effectively be used at this stage to increase receptivity to treatment.

Implications for the Clinician: Stage 2—Discontinuation of Use

- Acknowledge, respect, and work with ambivalence regarding change.
- Use destabilizing events to motivate to treatment; support recognition of disorder by individual or CSOs.
- Move quickly when treatment is wanted.
- Work with patient and CSOs to clearly articulate and specify impact of addictive behaviors on individual and family.
- Formal interventions can be used to motivate to treatment but require a thoughtful, compassionate, clear plan of action.
- Encourage CSO involvement in treatment and self-help regardless of patient decision about treatment.

Family and Its Impact on Treatment and Early Recovery

The transition from the discontinuing use stage to the engagement in treatment stage is often accompanied by unexpected emotions (e.g., fear, anger) as well as destabilizing roles in the family (often around issues related to responsibility) and loss of homeostasis. For example, an adolescent may begin using alcohol and drugs in response to a parent's abstinence. A spouse may feel extreme anger rather than the expected relief as the partner begins to get clean and sober.

Change for both the patient and the family is the most possible at the time of destabilization. As the family seeks to regain homeostasis, change can occur most effectively if both the person with the addictive disorder and the family members are actively engaged in the process. Ideally the patient will be involved in significant cognitive and behavioral changes. Family members can also be encouraged at this time to learn about the disorder and its impact on both the individual and the family. Learning about kinds of treatment, length of treatment, the role of relapse in chronic disorders, activities that support successful recovery, and appropriate roles and activities for family members and CSOs are all elements of successful treatment support.

Early recovery is often not a time of the "family pulling together" (Brown & Lewis, 1999). It is tempting for clinicians to attempt at this time to immediately restabilize the family. It is better, however, to encourage a focus on individual recovery for each patient and family that in turn supports foundational building blocks for the development of a healthy system. Encouraging individual responsibility for new recovery behaviors interrupts old enabling patterns that allowed the disorder to flourish without apparent consequences. For example, parents may be encouraged to see that their adolescent son should be responsible for a debt related to past use rather than restoring harmony to the family and relief to the son immediately by paying the debt. A family member may be encouraged to abandon previous rituals that contributed to use or abuse.

In this time of dramatic changes, it is best if family members are involved in the change process. Both family systems theory and the social ecological model suggest that change is best initiated and supported when the whole family is involved in treatment. Involving families in family therapy when treating SUDs has been associated with better retention and completion of treatment, reduced substance abuse (Liddle et al., 2001; Stanton & Shadish, 1997; Williams et al., 2000), reduced problem behaviors (Szapocznik et al., 2003), and improved academic performance (Williams et al., 2000).

Implications for the Clinician: Stage 3—Treatment and Early Recovery

- Length of treatment is a factor in successful outcomes; encourage involvement in treatment at different levels of care (inpatient, outpatient, IOP, residential, self help).
- Teach about the SUD as a progressive disorder with potential for recovery *and* relapse.
- Use evidence-based treatments for both the patient and CSOs.
- Support cognitive and behavioral changes.
- Provide, facilitate, and refer to family education and treatment groups.
- Refer to self-help groups for both patient and family.

Family and Its Impact on Ongoing Recovery

In ongoing recovery, abstinent behaviors and supports for those behaviors have been developed and solidified. However, the family educated about SUD recognizes that relapse is a factor in any chronic illness. The development of new interests and a support network that is consistent with recovery marks change for the whole family. This change may include not associating with friends who have SUDs of their own. New individual behaviors and patterns that support ongoing recovery are built into the family rituals and roles. One common change is for families to establish new ways to celebrate that do not involve drinking or drug use. The strong foundation in individual recovery and behavioral patterns supporting ongoing recovery give space for increasing focus on healthy relationship patterns that include flexibility, open communication, respect for the individual, and intimacy.

Implications for the Clinician: Stage 4—Ongoing Recovery

- Continue support and inquiry regarding abstinence and recovery with individual and family and CSOs.
- Help family develop a plan in case of relapse.
- Support lifestyle changes in the individual and family that sustain recovery.
- Support identification and expression of feelings that were masked or made unsafe by the presence of the SUD.
- Assess cohesiveness, problem-solving capacities, routines and rituals that support recovery, and individual and family identity.

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Other System Influences on Substance Use Disorders: Special Populations

Societal and cultural factors associated with age, gender, class, ethnicity, and other subgroup populations significantly affect the development of SUDs in the individual at the macro-system and exo-system levels. These effects are not only geographic and cultural but also ideological. The culture with which an individual is affiliated provides one more channel through which norms and values are conveyed and behaviors are viewed. It is important for the clinician to know both cultural differences in values and norms as well as his or her own biases toward these different groups when working with families or individuals from a population that is different from the clinician's own race or culture.

In general, racial and ethnic minorities receive inferior heath care and have worse health outcomes in the United States than whites. This includes their access and utilization of substance abuse treatment (Schmidt & Mulia, 2009). Understanding differences in racial and ethnic minorities will increase appreciation for variation in treatment needs. For example, differences in SUDs by ethnicity exist. A variety of factors have been indentified to serve as an explanation as to why. These include cultures and norms favorable to use, availability of drugs, and neighborhood poverty (Wallace, 1999). In addition, the understanding of the effects of immigration on various ethnic minorities is essential for understanding their cultural values (CSAT, 2004).

Ethnic minority groups studied are generally broken down into black/African American, American Indian/Alaska Native, Asian, mixed race of two or more races, and Hispanic/Latino. There is great diversity among individuals of the same race sometimes based on geographic locations, acculturation, and other factors. Consequently the descriptions listed below are generalizations and should be understood as such. What is most important is to solicit the specific stories of the patient in front of you so as to offer the most effective treatment that will be consistent with the patient's values and cultural beliefs. Acculturation is key with regard to assessment and to having a sense of how strong the cultural influence might be in terms of the patient's worldview. The more acculturated patient is more Americanized, and his or her ethnicity might play a less prominent role.

Examples of SUD differences in ethnicities can be seen in many ways. For example, the National Survey on Drug Use and Health (NSDUH) reports that in 2010, among persons aged 12 years or older, rates of substance dependence or abuse were lower among Asians (4.1%) than among other racial/ethnic groups, including American Indians/Alaska Natives (16%), persons reporting two or more races (9.7%), Hispanics (9.7%), whites (8.9%), and African Americans (8.2%) (U.S. DHHS, 2010b).

African Americans

African Americans are the second largest minority and represent 12.6% of the U.S. population. Generally African Americans share some common

Implications for the Clinician

- Being treated with respect is a core value and essential for engagement.
- Personal connection between clinician and patient may be the most important element in treatment (CSAT, 2004).
- African American patients can be highly sensitive to an authoritarian or patronizing approach (Boyd-Franklin, 1989).
- Immediate and/or extended family members should be included whenever possible.

cultural themes: They are bonded by their racial and cultural heritage, have a strong sense of spirituality, and are shaped by a history of social injustice and inequality. Community and family are strongly valued, including the importance of elders in the family. Contrary to popular belief, black youths who remain in school are less likely than their same-age white, Latino, or American Indian peers to engage in substance abuse (NRC, 2009). However, living in an urban environment where they may be exposed to substance use regularly and where there are limited employment opportunities creates risk at the meso- and exo-system levels. Disproportionate numbers of African Americans live in urban settings and in poverty. These meso-system factors heavily influence substance use. Assertiveness and standing up for one's rights are valued. The church is often a core influence at the exo-system level.

Hispanics

Hispanic/Latinos are the largest and fastest growing minority in the United States, representing 16.3% of the population. This group is composed of a variety of racial and ethnic groups with different cultures, including Mexican, Puerto Rican, Cuban, South American, Dominican, and Spanish. A disproportionate number of Hispanics live in urban settings and in poverty. The experience of specific groups of Hispanics often has to do with the original reasons for the group's immigration to the United States. For example, Cuban Americans have been granted more governmental support as a result of fleeing an oppressive communist government compared with Mexican Americans (NRC, 2009). Understanding a patient's immigration history is essential.

In general, Latinos have strong traditional family values. Respect, positive social relationships, and a cultural emphasis on politeness prevail. Assertiveness and confrontation are frowned on. There is a patriarchal hierarchy in the family system (NRC, 2009). The family is most often an extended family unit, including cousins, aunts and uncles, and godparents with whom there are very close ties (CSAT, 2004).

More acculturated individuals show higher rates of substance abuse. For example, English-speaking Mexican Americans are eight times more likely to smoke marijuana than Spanish-speaking peers. Similar trends exist among Puerto Ricans as well (Cuadrado & Lieberman, 1998).

Implications for the Clinician

- Family therapy can often be an effective intervention because it is consistent with the core values around the importance of the family system.
- Hispanic families often resolve conflict differently than Western families. Children are not encouraged to speak their mind because the family system is hierarchical and respecting elders is paramount (Santisteban & Mena, 2009).
- Be sure to ask about immigration history.
- Various ethnic subgroups may have a more permissive attitude toward substance abuse.
- Solicit feelings in a subtle and indirect way– don't be business-like.
- Discuss spiritual views and beliefs.

American Indian/Native Alaskan

American Indian/Native Alaskans are 0.9% of the U.S. population. Less than one-third of American Indians live on reservations, and the majority live in urban settings. They are the most impoverished ethnic group in the United States, with a history of oppression and discrimination connected to their removal from their traditional lands. This group has a strong sense of spirituality, and elders hold a high position and a strong sense of community and family. Values include sharing, cooperation, harmony with nature, and orientation in the present (Sue & Sue 1999). There is a high incidence of inhalant use and alcohol use among this group (NRC, 2009). Youths have higher rates of substance abuse compared with other ethnic groups. This may be due in part to failure to rebuild a sense of culture after the oppression they have experienced as well as permissive attitudes among adults.

The NSDUH study, sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA), also shows that American Indian or Native Alaskan adults have a rate of past-month binge alcohol drinking (i.e., five or more drinks on the same occasion—on at least 1 day in the past 30 days) well above the national average (30.6% vs. 24.5%) (U.S. DHHS, 2010b). The level of past-month illicit drug use was also found to be higher among American Indian or Native Alaskan adults than the overall adult population (11.2% vs. 7.9%).

Implications for the Clinician

- Include immediate and/or extended family members whenever possible.
- Depending on the tribe, families can be matriarchal or patriarchal, but usually there is one prominent male or female leader in a family. Gaining a family's trust is essential (McGoldrick, 1982).
- Clinical interventions consistent with Native American culture, such as storytelling, metaphor, and paradoxical interventions, can be effective (Sutton & Broken Nose, 1996).
- With regard to communication style, listening and observing can be more important than verbal communications (Paniagua, 1998).

Asians

Asians represent 4.8% of the U.S population. There are 60 racial/ethnic subgroups in this classification falling into three main categories—Pacific Islanders (Hawaiians, Samoans, Guamanians), Southeast Asians (Vietnamese, Thai, Cambodian, Laos, Burmese, and Phillipino), and East Asians (Chinese, Japanese, Korean) (CSAP, 1997). Each group has a varied history, culture, language, and religion. Most Asians in the United States live in urban areas. In general, Asians have a very negative view of substance abuse and may engage in secret keeping and denial. Asians have a nationalistic culture with an emphasis on harmony, working together, and mutual interdependence. Concepts of time and communication are quite different than those of Western culture. Time is considered a healer. Communication is in large part nonverbal, but the nonverbal cues have different meanings than Western nonverbal cues (NRC, 2009).

In general, Asians have the lowest rates of SUDs among the main ethnic minorities. There is a strong emphasis on education and academic achievement in the culture. The expectation of children is that they should be quiet and obedient. Values of moderation and restraint may help explain lower incidence of substance abuse. Genetic predisposition to "flushing" when drinking alcohol may reduce incidence of heavy drinking. Second- and third-generation Asian Americans are at higher risk for substance abuse (Mercado, 2000) than first-generation Asian Americans (Mercado, 2000). As with other cultures, as individuals become more acculturated to the United States, their incidence of substance abuse increases.

Age, gender, and sexual orientation can affect the development, maintenance, and treatment of SUDs from a biological standpoint at the micro-system level as well as socioculturally at the meso-, exo- and macro-system levels. Specific influences on these special populations will vary by region but most often include ostracism or marginalization by the mainstream culture. This can drive individuals from these special populations to seek comfort in substance use or to have their use go undetected.

Implications for the Clinician

- Deference to authority, emotional inhibition, hierarchical families, and gender-specific roles are all characteristics of Asian culture that may affect treatment.
- Asian families are patriarchal. The family patriarch may need to be involved to help facilitate change.
- Asians are often reluctant to admit to having a substance abuse problem, believing that it may be shaming to the family.
- Family members may participate in enabling, keeping the problem hidden (Chang, 2000).
- Asians generally are uncomfortable with confrontation. Their culture places high value on "saving face" and avoiding shame or humiliation. The very act of engaging in treatment and discussing family issues with a stranger can be seen as weak (Lee, 1996; Paniagua, 1998).

Elderly

SUDs affect 17% of adults older than 60 years. There are both biological and psychosocial issues that make elderly adults more susceptible to substance use problems. Older adults are often more sensitive to alcohol and medications on a biological level, and their bodies do not process these substances as efficiently as younger adults, thereby increasing the effect. Only recently has the extent of the problem received attention in the substance abuse and gerontology literature. Diagnosis can be difficult because the symptoms of common problems in elderly people, such as dementia and depression, are similar to the signs of SUDs (CSAT, 1998). The extent of the substance abuse problem can often go undetected among older adults because they are no longer in the workforce, can be socially isolated, and drive less, which reduces the likelihood that a problem would be recognized.

There are generally two patterns of abuse among older adults: a chronic lifelong pattern of use or a recent pattern of misuse in response to a life transition such as retirement, death of a loved one, or physical illness. Physiological changes associated with aging, including a decrease in water content in the body, can result in reduced tolerance (Dufour & Fuller, 1995). In addition, early onset of dementia can cloud accurate diagnosis because drug or alcohol intoxication can sometimes be misdiagnosed as dementia. Studies have shown that ageism contributes to the underdetection of substance abuse in older adults (Ivey et al., 2000).

Prescription drug abuse and misuse are also common among older adults. More than 36% of individuals older than 60 years use five or more prescription drugs monthly (Gu et al., 2010). For some individuals, the misuse of prescription drugs is accidental and is a result of confusion; others may overmedicate purposely to achieve an altered state or may even be selling medications to supplement their income. The incidence of depression is higher among older adults, which puts them at higher risk for abusing substances in an effort to self-medicate mood disorders. Medical comorbidities can complicate the diagnostic picture.

Implications for the Clinician

- Treatment is more effective and the prognosis better in individuals who have only recently developed a pattern of abuse or dependence on substances (CSAT, 2004).
- Gathering an accurate substance abuse history is important.
- Involving family members of the older adult in treatment can increase both effectiveness and retention in treatment.
- Family members can often be helpful in providing transportation and in reminding patients of appointments.
- Because of high rates of comorbidity, collateral contact with physicians or nursing staff treating other medical or psychiatric illnesses is important.
- Patients may be struggling with end-of-life issues such as death of a loved one or fears of their own death, which may contribute to their substance use.

Gay/Lesbian/Bisexual/Transgender

There is some evidence to suggest that substance abuse rates among the gay/lesbian/bisexual/transgender (GLBT) population are greater than that of the population as a whole, but currently no large-scale national studies have been done (Rosario, Hunter, & Gwadz, 1997; U.S. DHHS, 2010a). It is hypothesized that these individuals use substances to cope with the social stigma of their sexual orientation. Interestingly, gay men and lesbians report alcohol problems nearly twice as often as heterosexuals, but their drinking patterns differ minimally (McKirnan & Peterson, 1989). A factor to consider when working with this population is that they have likely experienced different forms of harassment with regard to their sexual orientation as well as possible physical or sexual assault.

Women

According to the 2010 NSDUH (U.S. DHHS, 2010b), the rate of current illicit drug use among persons aged 12 years or older was higher for males (11.2%) than for females (6.8%). Males were more likely than females to be current users of several different illicit drugs, including marijuana (9.1% vs. 4.7%), nonmedical use of psychotherapeutic drugs (3% vs. 2.5%), cocaine (0.8% vs. 0.4%), and hallucinogens (0.6$ vs. 0.3%). Despite lower rates of substance abuse among women than men, the consequences for women are significant. Studies show that women begin using substances for different reasons than men. For example, the death of a loved one or divorce (Brady & Randall, 1999) is more likely to present with women as a reason underlying the increasing use. Women also have barriers to treatment, such as child care responsibilities and a stigma associated with female substance abuse. Women often develop more severe substance abuse problems in a shorter time than men and use lesser amounts but with greater negative consequences. This is known as the *telescoping effect* (Diehl et al., 2007). Women with SUD have a high incidence of interpersonal violence and sexual assault (Covington, 1999; Lincoln et al., 2006).

Pregnant Women

According to the NSDUH 2010 (U.S. DHHS, 2010b), 4.4% of pregnant women aged 15 to 44 years were engaged in current illicit drug use based on data averaged across 2009 and 2010. This was lower than the rate among women in this age group who were not pregnant (10.9%). The

Implications for the Clinician

- GLBT patients may present as "out" with their sexual orientation or as "closeted," meaning they keep their sexual orientation hidden, which can affect their substance use.
- When initiating treatment, you may or may not know an individual's sexual orientation, so it is important to be sensitive to this fact.
- If a GLBT person is closeted to their family, familial involvement should proceed cautiously.
- Involvement of same-sex partners in treatment can be very effective.

rate of current illicit drug use was 16.2% among pregnant women aged 15 to 17 years, 7.4% among pregnant women aged 18 to 25 years, and 1.9% among pregnant women aged 26 to 44 years. This places teenage mothers and their unborn children at an even higher risk given the high rates of substance abuse. Pregnant women with SUD are at higher risk for anemia, gestational diabetes, hepatitis C, sexually transmitted disorders, poor oral hygiene, cystitis, and depression and anxiety. Obstetric complications that are commonly associated with pregnant women with SUDs are placental abruption, intrauterine growth restriction, spontaneous abortion, premature rupture of the membranes, preeclampsia, intrauterine fetal death, and premature labor and delivery (Helmbrecht & Thiagarajah, 2008). Babies born to mothers with SUDs are at increased risk for neonatal abstinence syndrome, sudden infant death syndrome, low birth weight, and early childhood cognitive and behavioral problems (Jones et al., 2010; Little et al., 2003).

Pregnant women frequently express reluctance to seek treatment for SUDs because of fear of being judged by health care providers and being reported to child protective services. Research suggests that coordination of care can improve clinical outcomes for both the baby and mother (Bahl et al., 2010; Wong et al., 2011). Specifically, the integration of care between substance abuse treatment, pediatrics, and obstetrics is essential. Babies born to mothers with SUDs frequently need neonatal intensive care unit care. Often, these different disciplines do not have an appreciation for what the others do, so as part of integration, education across disciplines is essential and will help retain pregnant mothers in treatment for SUDs even after they give birth.

Implications for the Clinician

- Women often come into treatment sicker than men because they often wait longer than men do to seek treatment.
- Women may be reluctant to be entirely truthful about their history of use because of fears of Child Protective Services involvement and the removal of their children.
- Issues particularly relevant to women include shame, stigma, trauma, and loss of control.
- Women tend to hide their substance abuse more than men due to the shame.
- It is critical to address environmental safety issues such as assessing risk for domestic violence or having a partner with an active SUD.
- History of trauma should be assessed when treating women because the incidence is high among women with SUD and unresolved trauma issues can present barriers to successful treatment.

Case Vignette 1

Sarah is a 42-year-old divorced woman seeking help from her family physician for symptoms of depression. She is irritable, has crying spells, and has limited social outlets. She is the mother of three children, ages 22, 18, and 12 years. Two children still live in the home. She works at a minimum-wage job and has health benefits. Her religious beliefs are important to her, but work and family leave her little time for church involvement or recreational outlets. She has been divorced for 10 years from her alcoholic husband who provides periodic financial support for the youngest child.

Sarah went to Al-Anon when her husband first went to treatment. She remembers that an alcohol use disorder is a medical disorder and clearly sees the pattern in both her family and his. She recalls that her husband relapsed despite her involvement with his treatment. Josh, her 22-year-old son, is on probation for possession of drugs. He has not kept a job for more than 3 weeks in the past 2½ years, and Sarah worries that he has friends who are bad influences. Sarah frequently helps him with his rent and is too exhausted to participate in his mandated treatment program despite a recommended family component. She is angry that SUD has again emerged in her life. She asks you for help with Josh.

- What treatments would you consider for Sarah?
- What recommendations would you make regarding Josh?
- What micro- and meso-system level considerations are important in the understanding of this case?

Answers to Case Vignette 1

Educate Sarah about SUDs, including their genetic and familial components. Help her to identify the need to address her own depressive symptoms. Teach about enabling and help her identify those behaviors that contribute to the interruption of the consequences of her son's use. Help her identify and cope with the feelings associated with this loss. Encourage her attendance at the family program and at Al-Anon.

Encourage Sarah to assist with an evaluation for her son Josh. In your work with Sarah, it is appropriate to meet with her son Josh. However, an evaluation of him would be best done by a referral to another clinician. Your work with Sarah needs to have continued emphasis on her well-being regardless of Josh's engagement in treatment.

On a micro-system level, Josh has been affected by both his father's SUD and his mother's enabling. His biology has exposed him to the genetic influence of addictive disorders. He most likely saw substance use at a very early age. Appropriate supervision of him may have been interrupted by a focus on his father or by beliefs influenced by the fact that heavy use was normalized in his family life.

On a meso-system level, he and his family may have been isolated from important religious traditions and community functions because of his father's alcoholism and the family response to it.

Case Vignette 2

Randall, a 48-year-old African American environmental services worker from the local University Hospital is referred to you from the hospital Employee Assistance Program (EAP) services. Recently he was caught by hospital security selling marijuana to another employee. EAP sends you a urine drug screen, which is positive for cannabis and opioids. A Board of Pharmacy report indicates he has no active prescription for pain medication. Randall is being required by his employer to attend treatment in order to retain his job.

Randall denies regular use or sale of drugs and says it was just a "one-time thing." He reports no history of any legal problems in the past and has a good work record. He has never been treated for substance abuse or mental health issues, nor does he think he needs treatment. However, he is willing to come and see you because he does not want to lose his job.

Randall is divorced and has two teenage children from whom he is estranged. He currently lives with his mother. His father is deceased. He is the youngest of three siblings, who all live locally.

- Who should you consider involving in treatment?
- What stage of his SUD development do you think Randall is in?
- How will you attempt to reduce Randall's ambivalence about engaging in treatment?
- What meso-, exo-, and macro-system level influences are important to understanding this case?

Answers to Case Vignette 2

Ideally, Randall's mother should be included in treatment because he lives with her. Including her in treatment will better help you to understand the micro-system influences on Randall's SUD. In the long term, including Randall's children in treatment as Randall enters into recovery would be beneficial because his estrangement from them might be a source of loss that could be fueling his substance use.

Randall has not yet entered into stage 1, recognition of disorder development. He is still in denial that he has a problem, as evidenced by his denial of regular use and statement that selling was a "one-time thing."

Developing rapport and a nonjudgmental stance toward Randall will be very important. The use of the skills and strategies of motivational interviewing can be helpful to engage him in treatment and explore and resolve his ambivalence about change.

Important micro-system considerations are how his mother, immediate family members, or friends have influenced or been affected by his SUD. It will be important to assess for substance abuse problems and attitudes toward substance use in the extended family. Important meso-system considerations would be the neighborhood Randall lives in as well as his work environment. Assessing any race or ethnicity issues could be important.

SUDs affect the entire family. The effects will differ depending on the different characteristics and structure of the family. Age, gender, class,

and ethnicity also affect the development, maintenance, and treatment of SUD in the individual at the macro-system and exo-system levels. When treating an individual who you know has an SUD, your assessment should include an examination of the culture, community, and neighborhood in which he lives as well as the ones in which he was raised. Understanding these ecological contexts can make the difference between successful and unsuccessful treatment. Whenever possible, family members should be included in treatment. If they cannot be seen in person, collateral phone contact can be useful. Part of any intervention with family members would be educating them about SUDs and helping to connect them to community resources, such as mutual support groups like Al-Anon and Nar-Anon.

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Chapter 5

Substances of Abuse and Their Clinical Implications

James H. Berry, Carl R. Sullivan, Julie Kmiec, and Antoine Douaihy

Key Points

- Knowledge of the principles of pharmacokinetics and pharmacodynamics is crucial to the understanding of substances of abuse.
- Detoxification does not constitute treatment for substance dependence but is one part of a continuum of care for substance-related disorders.
- Detoxification is defined as a set of interventions aimed at managing acute intoxication and withdrawal.
- The appropriateness of the use of medication and protocols in the management of an individual in a specific substance withdrawal state is critical to help minimize the serious complications of withdrawal syndromes.

Pharmacokinetics is defined as the study of the quantitative relationship between administered doses of a drug and the observed plasma/blood or tissue concentrations. The field of pharmacokinetics addresses drug absorption, distribution, biotransformation, and excretion or elimination. These processes, in addition to the dose, determine the concentration of drug at the active site and, therefore, the intensity and duration of the drug effect. Through the consideration of pharmacokinetics, physicians are able to determine the drug of choice, dose, route, frequency of administration, and duration of therapy in order to achieve a specific therapeutic objective when prescribing medications. A knowledge of pharmacokinetics will help a physician understand why particular drugs are abused and factors that affect their potential for abuse.

Pharmacodynamics is the study of the physiological and biochemical mechanisms by which a drug exerts its effects in living organisms. An effect is initiated by the drug binding to receptor sites on a cell's membrane, setting in motion a series of molecular and cellular reactions that culminate in some physiological (e.g., opioid-induced analgesia) or behavioral (e.g., alcohol-induced impairment such as ataxia) effect. Drugs typically have multiple effects. Knowledge of both pharmacokinetics and pharmacodynamics is central to an understanding of drug abuse. Simply put, pharmacokinetics is what the body does to the drug, and pharmacodynamics is what the drug does to the body.

This chapter is a concise overview of the specific pharmacokinetics and pharmacodynamics of some common drugs of abuse. The clinical effects of these drugs are described in terms of intoxication and withdrawal syndromes. Detoxification treatments for alcohol, benzodiazepines, and opioids are also discussed within a framework aimed at providing practical approaches to treatment.

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Basic Principles of Pharmacology

DRUG —Pharmacokinetics→ Concentration —Pharmacodynamics→ EFFECT

Pharmacokinetics: What the body does to the drug

- Absorption
  - Process in which drug goes from site of administration (e.g., oral [PO], intravenous [IV], intramuscular [IM], topical, inhaled) to site of measurement in body (usually plasma)
  - Affected by many factors, including:
  - For oral administration:
    - Dosage form (capsule, tablet, oral disintegrating tablet [ODT], solution, suspension)
    - pH of stomach
    - pH of small intestine
    - Presence of food in GI tract
    - Post gastric surgical changes
  - Solubility of the drug
    - H-binding
    - Ionization of functional groups of drug
  - Permeability of drug to biological membranes
  - Bioavailability: percentage of drug administered to body that reaches systemic circulation intact; in other words, how much of a drug reaches the biological fluid where it can exert its mechanism of action
  - This is affected by absorption and first-pass metabolism.
  - Intravenous administration is 100% bioavailable.
  - Oral drugs range from 5% to less than 100% bioavailable.
  - Drugs of abuse are often smoked, insufflated, and injected, resulting in high bioavailability.
- Distribution
  - Process of drug being transferred from site of measurement to peripheral body tissues
  - Depends on:
    - Blood flow to tissues
    - Permeability to tissues
    - Degree of binding of drug in blood (proteins: albumin, alpha-1 glycoprotein)
    - Degree of binding of drug to tissues
  - Volume of distribution (V_d): measurement of volume where drug distributes into body at equilibrium
- Metabolism
  - How the body breaks down the drug through physiological processes
  - Drugs can pass through the body without being metabolized (i.e., excreted unchanged), being partially metabolized, or being metabolized completely
  - Primary means of metabolism are phase 1 and 2 metabolism in the liver. Phase 1 metabolism is primarily through oxidative reactions

with the CYP450 enzymes that alter drug to various metabolites, active or inactive. Phase 2 metabolism occurs primarily in the liver but can also occur at other sites like the kidney, intestine, and lungs. Phase 2 reactions are conjugation reactions that are primarily completed through methylation, sulphation, acetylation, or glucuronidation by enzymes in the body

- Elimination/excretion
  - How the body gets rid of the drug and its metabolites
  - Drugs can be excreted in two primary ways: through urine by renal excretion or through feces by biliary excretion

Therapeutic window: optimal range of doses, where a dose exerts a therapeutic effect while causing minimal adverse effects

Therapeutic index: the ratio of the dose of a drug that causes a toxic response in 50% of the population (TD_{50}) to the dose of the drug that is therapeutically effective in 50% of the population (ED_{50}; $TI = TD_{50}/ED_{50}$). Drugs with a high therapeutic index need a large dose to cause a toxic response and a small dose to be effective.

- High therapeutic index: Minor increase of a dose will not greatly increase the risk of adverse effects (e.g., TI of sufentanil = 25,000).
- Low therapeutic index: Minor increase of a dose will greatly increase risk of adverse effects (e.g., TI of methadone = 10).

Pharmacodynamics: What the drug does to the body

- Mechanism of action, therapeutic effect
  - Drug interacting with receptor and eliciting a response
- Adverse effects, toxicities

Specific Clinical Syndromes

Alcohol

People use alcohol for a number of different reasons. Some people state that it helps them relax at the end of a long day, others find it helps them in social situations, it helps others to fall asleep, it decreases anxiety, and others state that they drink just because they like the taste.

The alcohol content in beer typically ranges from 3% to 10%, whereas the alcohol content of wine ranges from 8% to 20%, and the alcohol content of spirits can range from 20% to 70%.

Pharmacology of Alcohol

Absorption: Alcohol is absorbed in the stomach (70%), duodenum (25%), and remaining bowel (5%). The rate of absorption depends on gastric emptying time and can be delayed by food in the small intestine.

Distribution: Alcohol is water soluble, and once in the bloodstream, it is distributed throughout the body, gaining access to all tissues, including the brain and the fetus in pregnant women.

Metabolism: Alcohol is metabolized by alcohol dehydrogenase, which occurs in the stomach and gastric mucosa, to acetaldehyde. Acetaldehyde is a toxic chemical that is thought to be responsible for symptoms of a hangover, and repeated exposure to acetaldehyde can result in alcoholic hepatitis. Acetaldehyde is metabolized by aldehyde dehydrogenase to acetic acid.

Elimination: Alcohol exhibits zero-order kinetics and is eliminated at a constant rate regardless of how much alcohol is in the system. Typically, unhabituated drinkers clear 15 to 20 mg/dL/hr, whereas people who drink daily clear 25 to 35 mg/dL/hr.

Mechanism of Action: Alcohol acts as a central nervous system depressant, enhancing gamma-aminobutyric acid (GABA) and glycine receptor function, and antagonizing *N*-methyl-D-aspartate (NMDA) receptor functioning. Alcohol likely affects other neurotransmitter systems in the brain owing to its widespread reach.

Alcohol Intoxication

Most of us have seen someone under the influence of alcohol before ever becoming physicians. Common symptoms such as slurred speech, ataxia, and memory impairment are well-known symptoms of alcohol intoxication. Symptoms include the following:

- Slurred speech
- Uncoordination
- Unsteady gait
- Nystagmus
- Impaired attention or memory
- Stupor or coma

The behavioral or clinical effects increase with the blood alcohol concentration. Table 5.1 lists the typical clinical effects at a given breath alcohol concentration. Individuals with a high tolerance to alcohol may show fewer effects at higher concentrations.

Table 5.1 Typical Clinical Effects at a Given Breath Alcohol Concentration

Breath Alcohol Concentration	Clinical Effects
0.01–0.1	Euphoria, mild deficits in coordination, attention, cognition
0.1–0.2	Increased deficits in coordination and psychomotor skills, decreased attention, ataxia, impaired judgment, slurred speech, and mood variability
0.2–0.3	Lack of coordination, incoherent thoughts, confusion, nausea, and vomiting
0.30	Stupor, loss of consciousness
0.4	Possible death
>0.55	Death

Alcohol Withdrawal

People who have been drinking regularly over a period of time may experience alcohol withdrawal if they suddenly stop drinking. Table 5.2 shows common symptoms of alcohol withdrawal and when they typically appear. In patients who have high tolerance to alcohol, signs of alcohol withdrawal can appear even before blood alcohol level has reached zero.

Alcohol Detoxification

To avoid complications of alcohol withdrawal, people who experience symptoms of withdrawal when they try to stop drinking should undergo supervised detoxification. Alcohol detoxification can be done in either inpatient or outpatient settings. For many patients, it is possible to safely detoxify them as an outpatient if they are generally healthy, have no history of complicated withdrawal, and have a stable home environment. Other patients who have a history of complicated withdrawal or extenuating medical, psychiatric, or social factors warrant inpatient detoxification.

Adolescents may undergo outpatient detoxification; however, if their motivation to quit using is largely external (i.e., due to parental pressure), inpatient detoxification may be more appropriate because the adolescent may continue to use outside of a controlled environment.

Healthy geriatric patients have successfully undergone outpatient detoxification. Careful consideration of medical comorbidities, possible medication interactions, and social support must be given before starting an outpatient detoxification for an elderly individual.

Goals of Detoxification

- Decrease withdrawal symptoms
- Prevent more serious withdrawal symptoms from occurring
- Treat any medical or psychiatric comorbid disorders
- Prepare the patient for long-term recovery

Table 5.2 Common Symptoms of Alcohol Withdrawal

Onset	Symptoms
6–24 hr after last drink	Anxiety Insomnia Nausea and vomiting Headache Tremor Diaphoresis Psychomotor agitation Tachycardia Elevated blood pressure Elevated temperature
24–48 hr after last drink	Tactile hallucinations (from pins-and-needles sensation to formication) Visual hallucinations Auditory hallucinations
8–24 hr after last drink	Withdrawal seizure, typically grand mal
72–96 hr after last drink	Withdrawal delirium or delirium tremens (autonomic hyperactivity, tremor, confusion, disorientation, hallucinations without insight, psychomotor agitation, disruption of sleep–wake cycle)

Alcohol Withdrawal Assessment Scales

To adequately treat alcohol withdrawal, standardized scales composed of common withdrawal symptoms have been developed. These scales are meant to help guide treatment of alcohol withdrawal and should not be used as a substitution for clinical judgment. Two alcohol withdrawal scales will be discussed here: the Withdrawal Assessment Scale (WAS) developed by Foy, March, and Drinkwater (1988), and the Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised (CIWA-Ar; Sullivan et al., 1989).

The **WAS**, like the CIWA-Ar, is used to assess the severity of a patient's withdrawal from alcohol. Unlike the CIWA-Ar, it takes a patient's vital signs into account in its scoring system. Because autonomic hyperactivity is a key feature of alcohol withdrawal, we believe it is important to include a patient's vital signs in the withdrawal score and therefore use the WAS at our (JK and AD) institution. The WAS consists of 19 items, and scores can range from 0 to 98. A score of greater than 15 indicates significantly increased risk for severe alcohol withdrawal if untreated. The WAS is shown in Table 5.3.

The **CIWA-Ar** (Sullivan et al., 1989) is the other instrument commonly used to measure severity of alcohol withdrawal. It is a 10-item scale, and items are scored from 0 to 7, with the total score ranging from 0 to 67. Items include nausea and vomiting, tremor, paroxysmal sweats, anxiety, agitation, tactile disturbances, auditory disturbances, visual disturbances, headache or fullness in the head, and orientation (Table 5.4).

Table 5.3 Withdrawal Assessment Scale

Temperature	**Auditory Disturbances (Loud Noises, Hearing Voices)**
1 = 37°–37.5° C 2 = 37.6°–38° C 3 = >38° C	0 = Not present 2 = Mild harshness or ability to frighten (increased sensitivity) 4 = Intermittent auditory hallucinations (appears to hear things you cannot) 6 = Continue auditory hallucinations (shouting, talking to unseen persons)
Pulse (beats/min)	**Hallucinations**
1 = 90– 95 2 = 96–100 3 = 101–105 4 = 106–110 5 = 111–120 6 = >120	0 = None 1 = Auditory, tactile, or visual only 2 = Nonfused auditory or visual 3 = Fused auditory and visual
Respiration Rate	**Clouding of Sensorium (What day is this? What is this place?)**
1 = 20 – 24 2 = >24	0 = Oriented 2 = Disoriented for date by no more than 2 days 3 = Disoriented for date 4 = Disoriented for place (reorient if necessary)
Blood Pressure (diastolic, mm Hg)	**Quality of Contact**
1 = 95–100 2 = 101–103 3 = 104–106 4 = 107–109 5 = 110–112 6 = >112	0 = In contact with examiner 2 = Seems in contact, but is oblivious to environment 4 = Periodically becomes detached 6 = Makes no contact with examiner
Nausea and Vomiting (Do you feel sick, have you vomited?)	**Anxiety (Do you feel nervous?) (Observation)**
0 = None 2 = Nausea, no vomiting 4 = Intermittent nausea with dry heaves 6 = Nausea, dry heaves, vomiting	0 = No anxiety, at ease 2 = Appears anxious 4 = Moderately anxious 6 = Overt anxiety (equal to panic)

(*continued*)

Table 5.3 (Continued)

Tremor (Arms extended, fingers spread)	**Agitation (Observation)**
0 = No tremor 2 = Not visible, can be felt fingertip to fingertip 4 = Moderate with arms extended 6 = Severe, even when arms not extended	0 = Normal activity 2 = Somewhat more than normal activity 4 = Moderately fidgety and restless 6 = Pacing, or thrashing about constantly
Sweating (Observation)	**Thought Disturbance (Flight of ideas)**
0 = No sweat visible 2 = Barely perceptible, palms moist 4 = Beads of sweat visible 6 = Drenching sweats	0 = No disturbance 2 = Does not have much control over nature of thoughts 4 = Plagued by unpleasant thoughts constantly 6 = Thoughts come quickly and in a disconnected fashion
Tactile Disturbances	**Convulsions (Seizures or fits of any kind)**
0 = None 2 = Mild itching or pins and needles or numbness 4 = Intermittent tactile hallucinations (e.g., bugs crawling) 6 = Continuous tactile hallucinations (feeling things constantly)	0 = No 6 = Yes
Visual Disturbances (Photophobia, seeing things)	**Headaches**
0 = Not present 2 = Mild sensitivity (bothered by light) 4 = Intermittent visual hallucinations (occasionally sees things you cannot) 6 = Continuous visual hallucinations (seeing things constantly)	(Does it feel like a band around your head?) 0 = Not present 2 = Mild 4 = Moderately severe 6 = Severe
Flushing of the Face	Total =
0 = None 1= Mild 2 = Severe	(Maximum score = 98)

Table 5.4 Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised

Item	Score
Nausea and vomiting: Ask, "Do you feel sick to your stomach? Have you vomited?" Observation. 0 No nausea or vomiting 1 Mild nausea with no vomiting 4 Intermittent nausea with dry heaves 7 Constant nausea, frequent dry heaves and vomiting	
Tactile disturbances: Ask, "Have you any itching, pins-and-needles sensations, any burning, any numbness, or do you feel bugs crawling on or under your skin?" Observation. 0 None 1 Very mild itching, pins and needles, burning or numbness 2 Mild itching, pins and needles, burning or numbness 3 Moderate itching, pins and needles, burning or numbness 4 Moderately severe hallucinations 5 Severe hallucinations 6 Extremely severe hallucinations 7 Continuous hallucinations	
Tremor: Arms extended and fingers spread apart. Observation. 0 No tremor 1 Not visible, but can be felt fingertip to fingertip 2 3 4 Moderate with patient's arms extended 5 6 7 Severe, even with arms not extended	
Auditory disturbances: Ask, "Are you more aware of sounds around you? Are they harsh? Do they frighten you? Are you hearing anything that is disturbing to you? Are you hearing things that are not there?" Observation. 0 Not present 1 Very mild harshness or ability to frighten 2 Mild harshness or ability to frighten 3 Moderate harshness or ability to frighten 4 Moderately severe hallucinations 5 Severe hallucinations 6 Extremely severe hallucinations 7 Continuous hallucinations	

(*continued*)

Table 5.4 (Continued)

Item	Score
Paroxysmal sweats: Observation. 0 No sweat visible. 1 Barely perceptible sweating, palms moist 2 3 4 Beads of sweat obvious on forehead 5 6 7 Drenching sweats	
Visual disturbances: Ask, "Does the light appear to be too bright? Is its color different? Does it hurt your eyes? Are you seeing anything that is disturbing to you? Are you seeing things that you know are not there? Observation. 0 Not present 1 Very mild sensitivity 2 Mild sensitivity 3 Moderate sensitivity 4 Moderately severe hallucinations 5 Severe hallucinations 6 Extremely severe hallucinations 7 Continuous hallucinations	
Anxiety: Ask, "Do you feel nervous?" Observation. 0 No anxiety, at ease 1 Mild anxiety 2 3 4 Moderately anxious, or guarded, so anxiety is inferred 5 6 7 Equivalent to acute panic states as seen in severe delirium or acute schizophrenic reactions	
Headache, fullness in head: Ask, "Does your head feel different? Does it feel like there is a band around your head?" Do not rate for dizziness or lightheadedness. Otherwise, rate severity. 0 Not present 1 Very mild 2 Mild 3 Moderate 4 Moderately severe 5 Severe 6 Very severe 7 Extremely severe	

Table 5.4 (Continued)

Item	Score
Agitation: Observation. 0 Normal activity 1 Somewhat more than normal activity 2 3 4 Moderately fidgety and restless 5 6 7 Paces back and forth during most of the interview, or constantly thrashes about	
Orientation and clouding of sensorium: Ask, "What day is this? Where are you? Who am I?" 0 Oriented and can do serial additions 1 Cannot do serial additions or is uncertain about date 2 Disoriented for date by no more than 2 calendar days 3 Disoriented for date by more than 2 calendar days 4 Disoriented for place and/or person	
SCORE = (Maximum score = 67)	

CIWA-Ar Scores

- <8: mild withdrawal
- 9–15: moderate withdrawal
- >16: severe withdrawal

Medications Used for Alcohol Detoxification

Benzodiazepines

Since the 1970s, benzodiazepines have been accepted as the treatment of choice for alcohol detoxification because of their cross-tolerance with alcohol, increased safety profile compared with barbiturates, and ability to prevent withdrawal seizures and delirium tremens. It appears that all benzodiazepines are capable of suppressing the signs and symptoms of withdrawal. No single benzodiazepine or detoxification protocol has emerged as the consistent choice for treating withdrawal. However, the four benzodiazepines typically used in alcohol withdrawal are lorazepam, oxazepam, diazepam, and chlordiazepoxide. The choice of which benzodiazepine to use is a clinical one, based on detoxification setting, desired onset of action, a patient's age and comorbid medical conditions, and preferred route of administration. Clinician familiarity and preference for specific benzodiazepines also is important. Potential benefits and drawbacks to using lorazepam, oxazepam, diazepam, and chlordiazepoxide for alcohol detoxification are discussed in Table 5.5.

There are three general approaches to using benzodiazepines for alcohol withdrawal:

Table 5.5 Comparison of Common Benzodiazepines Used for Alcohol Detoxification

Medication	Important Considerations
Lorazepam	Routes of administration available = PO, SL, IM, IV Half-life = 14 hr Onset of action = PO intermediate; SL, IM, IV rapid Metabolism = only undergoes Phase II metabolism (glucuronidation) by liver, so may be preferable in elderly patients and those with significant liver disease
Oxazepam	Routes of administration available = PO Half-life = 8.2 hr Onset of action = slow Metabolism = only undergoes Phase II metabolism (glucuronidation) by liver, so may be preferable in elderly patients and those with significant liver disease
Diazepam	Routes of administration available = PO, IM, IV (IM absorption is erratic) Half-life = 30–60 hr Onset of action = all routes rapid Metabolism = undergoes oxidation and glucuronidation by liver
Chlordiazepoxide	Routes of administration available = PO Half-life = 30 hr, active metabolites = 200 hr Onset of action = intermediate Metabolism = undergoes oxidation and glucuronidation by liver

Onset of action: rapid, within 15 min; intermediate, 15–30 min; slow, 30–60 min.

- Symptom-Triggered Dosing—In this approach, the patient is typically given benzodiazepines when scoring above 10 on the WAS or CIWA-Ar. The WAS or CIWA-Ar is repeated 1 hour after every dose to assess the need for medication. The advantages of symptom-triggered therapy are that the patient usually receives a smaller amount of medication than a patient on a fixed dosing schedule, the detoxification process takes less time, and therefore the cost of detoxification is lower.
- Fixed Dosing—Some facilities may give a patient the same dose of a benzodiazepine for several days to treat withdrawal. It is important that patients on fixed dosing schedules are monitored for withdrawal symptoms using the WAS or CIWA-Ar between medication administration intervals in case they have withdrawal symptoms that are not adequately treated by the fixed dosing schedule. They will then receive medication if scoring above a certain threshold on the WAS or CIWA-Ar, which is usually 10.
- Tapered Dosing—Some facilities develop a tapering protocol for alcohol detoxification, giving the patient a tapering dose of a particular benzodiazepine over several days. As with patients on a fixed dosing schedule, it is important that patients on a tapering dose of benzodiazepine are monitored for withdrawal symptoms using the

WAS or CIWA-Ar between medication administration intervals in case they have withdrawal symptoms that are not adequately treated by the taper schedule. They will then receive medication if they score above a certain threshold on the WAS or CIWA-Ar, which is usually 10.

Anticonvulsants

Although never used as commonly as benzodiazepines, there is a significant literature on the usage of antiepileptic drugs (AEDs) in the treatment of mild to moderate alcohol withdrawal. Gabapentin, carbamazepine, and valproic acid are comparable to benzodiazepines in symptom reduction. Furthermore, in outpatient detoxification, these agents avoid the abuse potential of benzodiazepines. Interestingly, gabapentin, carbamazepine, and valproic acid have also been reported to reduce the level of postdetoxification drinking. Currently, there are no accepted standard detoxification protocols.

It was once thought that adding an anticonvulsant, such as phenytoin, to benzodiazepine treatment reduced the risk for alcohol withdrawal seizures. However, more recent studies have found that when patients are properly treated with benzodiazepines for alcohol withdrawal, the addition of phenytoin does not lead to an improved outcome (Rathlev et al., 1994).

Beta-Adrenergic Antagonists and Alpha-Adrenergic Agonists

Agents such as atenolol and clonidine have been shown to ameliorate the autonomic symptoms of mild to moderate alcohol withdrawal. These agents, however, do not have any known anticonvulsant activity. In addition, beta-blockers may contribute to delirium. Use of these agents may mask other autonomic symptoms of withdrawal and therefore make it difficult to use withdrawal scales to guide treatment. Hence their use is adjunctive and is recommended only if needed to control persistent hypertension or tachycardia.

Thiamine and Magnesium

To avoid the risk of developing Wernicke encephalopathy (confusion, ataxia, ophthalmoplegia/nystagmus) and Wernicke-Korsakoff syndrome (Wernicke encephalopathy with memory loss and confabulation), all patients in alcohol withdrawal should receive thiamine (100 mg PO/IM/IV). Patients who have symptoms of Wernicke encephalopathy, those at high risk for malnutrition, and those who are to receive intravenous fluids containing glucose should receive a parenteral dose of thiamine.

Total body magnesium is usually decreased in alcoholic patients in withdrawal. Magnesium replacement has not been shown to affect the severity of withdrawal symptoms, and it is unclear whether magnesium supplementation decreases the incidence of seizures. Therefore, although magnesium replacement carries little risk, there is no evidence that supplementation should be routinely used.

Antipsychotics

There is no evidence that antipsychotic medications are useful as primary detoxification agents in alcohol withdrawal. Their use is limited to those patients who have hallucinations or agitation. Haloperidol has been most extensively used, and the recommended dose is 2 mg to 5 mg IM/PO every 2 hours as needed for agitation.

Barbiturates

Benzodiazepines have almost completely replaced barbiturates as agents used for alcohol detoxification because of their increased safety profile. Phenobarbital is still used by some programs because it has a long half-life, anticonvulsant activity, and low abuse liability, and it is inexpensive. It is strongly recommended that use of barbiturates in detoxification only occur in a hospital setting by experienced physicians.

Benzodiazepines

Benzodiazepines are primarily prescribed for anxiety and insomnia. They are also used to treat seizures muscle spasms, and to induce anesthesia. The first benzodiazepine, chlordiazepoxide, was manufactured in 1957. Soon after, diazepam, also known as "Mother's little helper," was developed and became the top-selling drug in the United States for several years. Diazepam was marketed as nonaddictive, much like heroin and morphine had been in the early 1900s when they were first manufactured.

Properties that lend a benzodiazepine to having a higher abuse liability are a faster onset of action, higher lipid solubility, and shorter half-life, all characteristics of alprazolam, for example.

Pharmacology of Benzodiazepines

Absorption

Benzodiazepines can be given orally, intramuscularly, intravenously, and even rectally (e.g., Diastat). Some people who abuse these medications use them intranasally. Oral absorption depends on the medication but typically is 90% or greater. Diazepam can be given intramuscularly but has erratic absorption, whereas intramuscular lorazepam has high intramuscular absorption.

Distribution

These medications are highly protein bound and widely distributed. They enter the brain quickly and are also distributed to the plasma, lungs, liver, and adipose tissue, and cross the placenta.

Metabolism

CYP3A4 is responsible for oxidation of alprazolam, clonazepam, chlordiazepoxide, and diazepam (phase I metabolism). Metabolites may be active and have long half-lives (e.g., diazepam). Lorazepam, oxazepam, and temazepam undergo phase II metabolism, that is, glucuronidation only. The half-life ranges from 5 to 60 hours depending on the benzodiazepine.

Elimination

These medications are largely excreted by the kidney.

Mechanism of Action

Benzodiazepines potentiate GABA, the major inhibitory neurotransmitter of the brain, at the postsynaptic $GABA_A$ receptor. The $GABA_A$ subunit mediates anticonvulsant, anxiolytic, amnestic, and sedative effects.

Symptoms of Benzodiazepine Intoxication

Patients intoxicated with benzodiazepines or nonbenzodiazepine omega-1 agonists (e.g., zolpidem, zaleplon, eszopiclone) often look very much

like someone who is intoxicated on alcohol. The symptoms include the following:

- Drowsiness
- Unsteady gait
- Slurred speech
- Poor coordination

It is extremely unlikely that death will occur in a patient who overdoses on benzodiazepines alone. However, it is important to note that very often benzodiazepines are found as part of polypharmacy ingestion that includes alcohol and opioids. It is well known that the combination of two or more sedatives amplifies the likelihood of dying from overdose.

Benzodiazepine Withdrawal Symptoms

When considering the severity of impending withdrawal, it is helpful to know how long the patient has been on benzodiazepines and at what dosage. There is little chance of withdrawal in patients who have been on benzodiazepines for 2 weeks or less. However, greater than 90% of long-term users (e.g., 8 months to 1 year), even at therapeutic doses, have withdrawal symptoms. Patients taking short-acting compounds or high doses have most severe withdrawal. The presence or absence of other drugs, including alcohol, must also be taken into consideration. The withdrawal syndrome from benzodiazepines is similar to that seen for alcohol and includes the following:

- Tachycardia
- Hypertension
- Agitation
- Anxiety and panic
- Irritability
- Insomnia
- Tremors
- Tinnitus
- Nausea and anorexia
- Sensory disturbances—distortions in taste and smell
- Hallucinations
- Seizures
- Delirium—sometimes in the absence of autonomic hyperactivity

Withdrawal severity can be measured using the WAS or CIWA-Ar (see earlier section, "Alcohol Withdrawal"), and as in alcohol withdrawal, the withdrawal score can be used to guide treatment.

Detoxification from Benzodiazepines

There are three strategies for the safe discontinuation of benzodiazepines in a patient who is physically dependent on them. A gradual taper, outpatient detoxification, or inpatient detoxification can be performed depending on clinical characteristics.

1. **Gradual Taper**—If a patient is taking a therapeutic dose and there is no concern that he or she is abusing the medication, a gradual taper of the benzodiazepine can be performed. A Cochrane review (Denis et al., 2006), found that a gradual taper over 10 weeks led to a higher completion rate and was judged more favorably than abrupt discontinuation. Lader et al. (2009) propose an 8- to 12-week taper

and suggest that if the taper is much longer, the withdrawal becomes "the focus of the patient's existence." Conventional wisdom is to change patients to a benzodiazepine with a longer half-life before the taper, but the Cochrane review (2006), which only included one study, did not find much support for this practice (Murphy et al., 1991).

2. **Outpatient Detoxification**—This is for patients who need to be detoxified from benzodiazepines in a safe and efficient manner, such as patients who are using illicitly obtained benzodiazepines or patients who are abusing their prescription. Unlike a gradual taper, detoxification is completed over 4 to 7 days.
   a. As with alcohol withdrawal, patients may undergo outpatient detoxification if they are generally healthy, have no history of complicated withdrawal, and are in a stable environment.
   b. Patients are medicated with benzodiazepines as for alcohol withdrawal (i.e., lorazepam, oxazepam, diazepam, or chlordiazepoxide) using a fixed dose, taper, or symptom-triggered dosing regimen (see earlier section, "Alcohol Withdrawal," for explanation of these terms).
   c. Detoxification from benzodiazepines is similar to detoxification from alcohol, with symptom severity measured by the WAS or CIWA-Ar.
3. **Inpatient Detoxification**—This is for patients who have a history of complicated withdrawal or extenuating medical, psychiatric, or social factors and need to be detoxified from benzodiazepines in a safe and efficient manner in a medically monitored setting.
   a. Patients are medicated with benzodiazepines as for alcohol withdrawal (i.e., lorazepam, oxazepam, diazepam, or chlordiazepoxide) using a fixed dose, taper, or symptom-triggered dosing regimen (see earlier section, "Alcohol Withdrawal," for explanation of these terms).
   b. Detoxification from benzodiazepines is similar to detoxification from alcohol, with symptom severity measured by the WAS or CIWA-Ar.

Several adjunctive medications have been studied for patients undergoing benzodiazepine withdrawal and appear in Table 5.6.

Protracted Withdrawal of Benzodiazepines

A protracted withdrawal syndrome has been proposed for some patients who have been on long-term benzodiazepine therapy. These patients complain of prolonged neuropsychiatric symptoms after cessation of benzodiazepines, including anxiety, insomnia, depression, paresthesia, tinnitus, and perceptual and motor symptoms (Ashton, 1995). These symptoms may make it difficult for a patient to remain abstinent from benzodiazepines if he or she is very uncomfortable. Therefore, it is important to address these complaints and treat the symptoms with nonaddictive medications, such as those listed below, or selective serotonin reuptake inhibitors (SSRIs), in addition to supportive therapy.

Table 5.6 Studies on Adjunctive Medications for Patients Undergoing Benzodiazepine Withdrawal

Medication	Effect of Medication	Study
Propranolol	Patients taking propranolol had a lower resting pulse and not as great an increase in anxiety during benzodiazepine taper compared with those taking placebo.	Hallstrom et al., 1988
Hydroxyzine	Patients taking 25–50 mg had a decrease in anxiety during a benzodiazepine taper compared with those taking placebo.	Lemoine et al., 1997
Carbamazepine	When given during and after a benzodiazepine taper, it may reduce withdrawal symptoms and promote abstinence compared with placebo.	Schweizer et al., 1991
Trazodone	A significantly higher percentage of patients taking trazodone during a benzodiazepine taper were abstinent from benzodiazepines 5 weeks after taper compared with patients taking placebo	Rickels et al., 1999
Sodium valproate	A significantly higher percentage of patients taking sodium valproate during a benzodiazepine taper were abstinent from benzodiazepines 5 weeks after taper compared with patients taking placebo.	Rickels et al., 1999
Imipramine	Pretreatment and use of imipramine during benzodiazepine taper increased taper success rate, and a significantly higher percentage of patients taking imipramine were abstinent from benzodiazepines 12 weeks after taper compared with those taking placebo.	Rickels et al., 2000

Opioids

Opioids are prescribed for the treatment of pain. The term *opioid* refers to all natural and synthetic compounds related to opium. The term *opiate* refers to drugs that are made from opium or thebaine, such as heroin, codeine, and morphine.

Heroin was first manufactured by Bayer Corporation in 1898 as a pain and cough remedy. Like other opioids in the 19th century, it was thought to be nonaddictive. It gained widespread use by the medical profession in the early 20th century. In 1913, Bayer stopped manufacturing and selling heroin, and

in 1924, the United States banned the production and sale of heroin. Now heroin is imported to the United States primarily from Mexico and Asia.

Prescription opioids are available orally, transdermally, intravenously (and even transmucosally and intranasally for breakthrough cancer pain). Since 1991, there has been a significant increase in the number of prescriptions of opioids in the United States. Some patients with opioid dependence are prescribed opioid pain medications, while others take medications prescribed to family members or friends, or buy pills off the street. To prevent abuse of prescription opioids, manufacturers are developing pills that are crush proof or adding naloxone to make a person go into opioid withdrawal if the pill is dissolved and injected. Some states have prescription drug monitoring programs and "doctor shopping" laws to try to curb the prescription drug abuse epidemic.

People who abuse opioids often use them for their analgesic, sedative, and euphoric effects. Abused pill opioids are taken in a variety of ways—swallowed whole, chewed and swallowed, crushed and insufflated, dissolved and injected, or heated up while inhaling the fumes (i.e., "freebased or smoked"). Some patients with opioid dependence will chew on fentanyl patches to get the drug's effects much more quickly. People who use heroin most often will insufflate it or inject it into their veins. Other times, they may inject it just under the skin (i.e., "skin popping") or into their muscles or heat it up and smoke the fumes (i.e., "chasing the dragon").

Pharmacology of Heroin (Diacetylmorphine)

Absorption

Heroin is not typically taken orally. About 50% of the heroin dose is bioavailable when it is smoked, compared with 100% when it is injected intravenously. Heroin is rapidly absorbed through the mucous membranes because of its lipophilicity, so when heroin is insufflated, it is highly absorbed owing to good perfusion in the nasal mucous membranes.

Distribution

Heroin is lipid soluble and can cross the blood–brain barrier. Heroin's biologically active metabolite, 6-mono-acetylmorphine (6-MAM), enters the brain. Heroin's other active metabolite, morphine, is widely distributed to the liver, lung, kidneys, and brain.

Metabolism

Heroin is a prodrug, which undergoes almost spontaneous hydrolysis/deacetylation to 6-MAM in the serum and then undergoes further deacetylation to become morphine. Both 6-MAM and morphine are active drugs. Morphine undergoes glucuronidation in the liver and kidneys to an inactive metabolite, morphine-3-glucuronide, and an active metabolite, morphine 6-glucuronide. The half-life of heroin is about 3.5 minutes, and the half-life of its metabolites is about 4 hours.

Elimination

About 90% of morphine (and thereby heroin) is excreted in the urine, and less than 10% is excreted in the feces.

Mechanism of Action

Opioids bind to the mu opioid receptor in the brain. Opioids exert most of their reinforcing actions through binding at the mu opioid receptor in the brain.

Signs and Symptoms of Opioid Intoxication

- Bradycardia
- Hypotension
- Hypothermia
- Sedation
- Head nodding
- Constricted pupils
- Slurred speech
- Euphoria
- Analgesia

Signs and Symptoms of Opioid Withdrawal

Patients who become physically dependent on opioids are trapped in a cycle of having to use to avoid opioid withdrawal (i.e., negative reinforcement). Some patients report they no longer get high from using, they just use to avoid getting sick.

It is often said that the symptoms of opioid withdrawal closely mimic those of influenza. In fact some patients will report that they have the "flu" to their family, friends, or physician. Although patients often report feeling like they are dying from opioid withdrawal, it is rarely fatal. Common symptoms include the following:

- Tachycardia
- Hypertension
- Hyperthermia
- Increased respiratory rate
- Insomnia
- Dilated pupils
- Diaphoresis
- Rhinorrhea
- Lacrimation
- Yawning
- Muscle spasms
- Body aches
- Restlessness
- Abdominal cramps
- Nausea and vomiting
- Diarrhea
- Tremor
- Anxiety
- Piloerection

Clinical Opioid Withdrawal Scale

The Clinical Opioid Withdrawal Scale (COWS; Wesson et al., 1999) is a useful, clinician-administered 11-item scale that measures opioid withdrawal symptoms (Table 5.7). The **COWS** was initially used as a way of measuring opioid withdrawal associated with initiation of buprenorphine treatment. It typically takes 2 to 4 minutes to administer by a trained

Table 5.7 Clinical Opioid Withdrawal Scale

Item	Score
Resting pulse rate (record beats per minute): *Measured after patient is sitting or lying for one minute* 0 Pulse rate 80 or below 1 Pulse rate 81–100 2 Pulse rate 101–120 4 Pulse rate >120	
Sweating: *Over past ½ hour not accounted for by room temperature or patient activity* 0 No report of chills or flushing 1 Subjective report of chills or flushing 2 Flushed or observable moistness on face 3 Beads of sweat on brow or face 4 Sweat streaming off face	
Restlessness: *Observation during assessment* 0 Able to sit still 1 Reports difficulty sitting still, but is able to do so 3 Frequent shifting or extraneous movements of legs/arms 5 Unable to sit still for more than a few seconds	
Pupil size: 0 Pupils pinned or normal size for room light 1 Pupils possibly larger than normal for room light 2 Pupils moderately dilated 5 Pupils so dilated that only the rim of the iris is visible	
Bone or joint aches: *If patient was having pain previously, only the additional component attributed to opiate withdrawal is scored* 0 Not present 1 Mild diffuse discomfort 2 Patient reports severe diffuse aching of joints/muscles 4 Patient is rubbing joints or muscles and is unable to sit still because of discomfort	
Runny nose or tearing: *Not accounted for by cold symptoms or allergies* 0 Not present 1 Nasal stuffiness or unusually moist eyes 2 Nose running or tearing 4 Nose constantly running or tears streaming down cheeks	

Table 5.7 (Continued)

Item	Score
GI upset: *Over last ½ hour* 0 No GI symptoms 1 Stomach cramps 2 Nausea or loose stool 3 Vomiting or diarrhea 5 Multiple episodes of diarrhea or vomiting	
Tremor: *Observation of outstretched hands* 0 No tremor 1 Tremor can be felt, but not observed 2 Slight tremor observable 4 Gross tremor or muscle twitching	
Yawning: *Observation during assessment* 0 No yawning 1 Yawning once or twice during assessment 2 Yawning three or more times during assessment 4 Yawning several times/minute	
Anxiety or irritability: 0 None 1 Patient reports increasing irritability or anxiousness 2 Patient obviously irritable anxious 4 Patient so irritable or anxious that participation in the assessment is difficult	
Gooseflesh skin: 0 Skin is smooth 3 Piloerection of skin can be felt or hairs standing up on arms 5 Prominent piloerection	
SCORE = (Maximum score = 47)	

clinician and can easily be done in the office or hospital. The COWS score can be used to guide treatment of opioid withdrawal (see below), for buprenorphine induction, or to guide dose increases for methadone maintenance (see chapter 7).

Total scores range from 0 to 47, and withdrawal has been classified as follows:

- Mild (5–12)
- Moderate (13–24)
- Moderately severe (25–36)
- Severe (>36)

Patients with moderately severe to severe withdrawal may need inpatient detoxification. The COWS score can also be used to guide buprenorphine induction in order to avoid precipitated withdrawal (see later section, "Buprenorphine," and chapter 7).

Clinical Institute Narcotic Assessment

The Clinical Institute Narcotic Assessment (**CINA**) was developed by Peachey and Lei in 1988 to assess opioid withdrawal symptoms (Table 5.8). It measures 11 symptoms: 4 based on patient self-report and 7 based on clinician observation. Self-report items include abdominal changes, changes in temperature, nausea and vomiting, and muscle aches. Parameters based on observation are gooseflesh, nasal congestion, restlessness, tremor, lacrimation, sweating, and yawning. The total maximum score is 31, with higher scores indicating more severe withdrawal. The CINA was used to validate the COWS for assessing opioid withdrawal (Tompkins et al., 2009).

Pregnancy

It is generally recommended that pregnant women not be detoxified from opioids. Detoxification is stressful for the embryo or fetus and may lead to miscarriage. Furthermore, many women, once detoxified, do not maintain abstinence for the duration of the pregnancy, and the fetus is subject to periods of opioid exposure and withdrawal and often has poor prenatal care. Rather than detoxify from opioids, it is recommended that pregnant women start on methadone or buprenorphine maintenance. See chapter 7 for further discussion of opioid agonist treatments.

Opioid Detoxification

The symptoms of opioid withdrawal are often extremely uncomfortable for the patient who is dependent on opioids and trying to stop using. Without medication-assisted detoxification, the patient is often intensely driven to obtain opioids to relieve the withdrawal symptoms. In order to break this addictive cycle, physicians must be able to provide some relief options when a patient presents in withdrawal or indicates a desire to stop using. There are several approaches to opioid detoxification, although the clinician may be limited by local resources and what may be reimbursed by third-party payers. Both inpatient and outpatient opioid detoxification are possible. The following section describes pharmacological options commonly used for opioid detoxification and alleviation of opioid withdrawal symptoms.

Clonidine

For three decades, the alpha-2 agonist, clonidine, has been used off label to help ameliorate the symptoms of opioid withdrawal. During opioid withdrawal, it is thought that some of the symptoms are secondary to noradrenergic hyperactivity in the locus ceruleus. Clonidine may decrease some of the opioid withdrawal symptoms, including lacrimation, rhinorrhea, myalgia, joint pain, restlessness, and gastrointestinal symptoms (Gold et al., 1978). Although clonidine will not alleviate all symptoms of withdrawal, for many patients, it will make it more tolerable.

Table 5.8 Clinical Institute Narcotic Assessment

Parameters	Findings
Parameters based on questions and observation:	
Abdominal changes: Do you have any pains in your abdomen?	0 No abdominal complaints; normal bowel sounds 1 Reports waves of crampy abdominal pain 2 Crampy abdominal pain; diarrhea; active bowel sounds
Changes in temperature: Do you feel hot or cold?	0 None reported 1 Reports feeling cold; hands cold and clammy to touch 2 Uncontrolled shivering
Nausea and vomiting: Do you feel sick to your stomach? Have you vomited?	0 No nausea or vomiting 2 Mild nausea; no retching or vomiting 4 Intermittent nausea with dry heaves 6 Constant nausea; frequent dry heaves and/or vomiting
Muscle aches: Do you have any muscle cramps?	0 No muscle aching reported; arm and neck muscles soft at rest 1 Mild muscle pains 3 Reports severe muscle pains; muscles in legs, arms, or neck in constant state of contraction
Parameters based on observation alone:	
Gooseflesh:	0 None visible 1 Occasional goose flesh but not elicited by touch, not permanent 2 Prominent goose flesh in waves and elicited by touch 3 Constant goose flesh over face and arms
Nasal congestion:	0 No nasal congestion or sniffling 1 Frequent sniffling 2 Constant sniffling, watery discharge
Restlessness:	0 Normal activity 1 Somewhat more than normal activity; moves legs up and down; shifts position occasionally 2 Moderately fidgety and restless; shifting position frequently 3 Gross movement most of the time or constantly thrashes about
Tremor:	0 None 1 Not visible but can be felt fingertip to fingertip 2 Moderate with patient's arm extended 3 Severe even if arms not extended

(*continued*)

Table 5.8 (Continued)

Parameters	Findings
Lacrimation:	0 None 1 Eyes watering; tears at corners of eyes 2 Profuse tearing from eyes over face
Sweating:	0 No sweat visible 1 Barely perceptible sweating; palms moist 2 Beads of sweat obvious on forehead 3 Drenching sweats over face and chest
Yawning:	0 None 1 Frequent yawning 2 Constant uncontrolled yawning
SCORE = (Maximum score = 31)	

On the first day of detoxification, the patient is usually prescribed clonidine 0.1 mg, one tablet every 4 to 6 hours as needed for opioid withdrawal, and 0.1 to 0.2 mg every 4 to 6 hours as needed on subsequent days, up to 1.2 mg daily. Dosing is limited by a patient's blood pressure. Patients who are undergoing outpatient detoxification should be instructed to hold doses if they feel lightheaded. Patients should be instructed to drink plenty of fluids and change positions slowly to avoid orthostatic hypotension. Because the medication may also cause sedation, patients should not drive or operate machinery while taking it. If patients are undergoing inpatient detoxification, blood pressure and pulse should be taken before administering each dose of medication, and the medication should be held if the blood pressure is less than 85/55 mmHg. Toward the end of the detoxification, the clonidine dose should be tapered by 0.1 to 0.2 mg daily to avoid rebound hypertension.

Occasionally, clonidine patches (0.1 mg) will be prescribed for treatment of opioid withdrawal. The patch, once placed, works for 7 days. Steady state is not reached for 24 to 48 hours after starting the patch, so oral clonidine will have to be given additionally for the first 2 days. The advantage of using the patch is that the patient receives a constant dose of clonidine without the peaks and troughs a patient taking clonidine tablets experiences.

Typical adverse effects of clonidine include dry mouth, sedation, low blood pressure, dizziness, and anergia.

Other adjunctive medications can be given with clonidine to help treat other symptoms of opioid withdrawal (Table 5.9). Medications used vary from institution to institution based largely on a clinician's experience and reading of the literature because there are no evidence-based guidelines on which medications to use with an alpha-2 agonist. Generally, benzodiazepines are not recommended for outpatient detoxification unless a

Table 5.9 Adjunctive Medications Used with Clonidine to Treat Symptoms of Opioid Withdrawal

Symptom	Medication Used	Typical Doses
Anxiety	Hydroxyzine pamoate	25–50 mg PO q4hr PRN anxiety
Insomnia	Trazodone	50–150 mg PO QHS PRN insomnia
	Quetiapine	50–100 mg PO QHS PRN insomnia
Nausea/ vomiting (N/V)	Prochlorperazine maleate	5–10 mg PO q6–8hr PRN N/V
	Promethazine	12.5–25 mg PO q4–6hr PRN N/V
	Trimethobenzamide	300 mg PO q6–8hr PRN N/V
	Ondansetron	4–8 mg PO q8hr PRN N/V
Diarrhea	Loperamide	2 mg PO after each loose stool (up to 16 mg daily)
	Diphenoxylate/atropine	1–2 tabs PO q6hr PRN diarrhea (up to 8 tabs daily)
Myalgia	Ibuprofen	600 mg PO q6hr PRN pain
	Naproxen	500 mg PO q12hr PRN pain

patient is also withdrawing from benzodiazepines or alcohol, owing to their abuse potential and risk of diversion.

Lofexidine

Of note, another alpha-2 adrenergic agonist, lofexidine, which has been used in the United Kingdom for opiate withdrawal for 13 years, has undergone Phase 3 clinical trials in the United States for treatment of opioid withdrawal. The pharmaceutical company, US WorldMeds, reported that they received a $3 million grant from the National Institute on Drug Abuse (NIDA) to develop lofexidine in February 2011. If approved by the U.S. Food and Drug Administration (FDA), lofexidine may become more popular than clonidine because it is expected to have less of an effect on blood pressure.

Guanfacine

Guanfacine, an alpha-2 adrenergic agonist like clonidine and lofexidine, has been used in studies on treatment of opioid withdrawal (Gowing et al., 2009), but to a lesser extent than clonidine. Because there is a larger evidence base for clonidine, it is typically used in opioid withdrawal rather than guanfacine.

Methadone

Methadone is a long-acting mu-opioid agonist that has been used successfully for more than 40 years for opioid detoxification. Its use is limited

to facilities that are licensed to prescribe methadone for the treatment of opioid dependence. Prescribers must have a Drug Enforcement Administration (DEA) registration number to prescribe methadone in one of these facilities.

If a patient is admitted to an inpatient facility for methadone detoxification from opiates, methadone is given in 5- to 10-mg increments until physical signs of opioid withdrawal abate, usually up to a total of 10 to 20 mg in the first 24 hours. A higher dose of methadone, for example, 30 mg, may be required for a patient who uses a larger amount of opioids daily or perhaps heroin of higher purity. Once a stabilizing dose is reached, the dose is tapered by 20% daily, which can result in a 1- to 2-week procedure.

Patients who have been maintained on methadone for treatment of opioid dependence (see chapter 7 for further details on methadone maintenance) and want to taper off of the medication can do so at their own rate under most circumstances (exceptions are patients who are administratively discharged because of violence or nonadherence to program rules, or because they are in arrears at the clinic and no arrangements can be made to correct this). Studies have been conducted to determine the optimal rate of taper for outpatients at methadone clinics. Senay et al. (1977) conducted a double-blind study of methadone maintenance patients and found that patients tapered from methadone by 3% of initial dose per week did better than those tapered by 10% of their initial dose per week, as determined by dropout rates, requests to stop the study, illicit drug use, and withdrawal symptom scores.

Buprenorphine

In 2002, the FDA approved buprenorphine as the first office-based treatment for opioid dependence. Clinicians must have a DATA (Drug Abuse Treatment Act 2000) waiver and "X" DEA number to prescribe buprenorphine for the treatment of opioid dependence or withdrawal. To receive a DATA waiver, physicians must go through an 8-hour buprenorphine training session. These trainings are offered at annual meetings of the American Academy of Addiction Psychiatry, American Society of Addiction Medicine (ASAM), and American Osteopathic Academy of Addiction Medicine. The American Academy of Addiction Psychiatry and American Osteopathic Academy of Addiction Medicine regularly offer webinars and trainings, which can be accessed on PCSSB.org.

Buprenorphine is a partial opioid agonist that partially binds to the mu-opioid receptor, and it is also an antagonist at the kappa receptor. It has a very high affinity for the mu receptor and exhibits slow dissociation from it. Buprenorphine, even at low doses, may precipitate opioid withdrawal in patients who have opioids in their system. Buprenorphine comes with or without naloxone. When it is mixed with naloxone, it is combined in a 4 to 1. Recently generic buprenorphine/naloxone sublingual tablets have become available and Suboxone itself is only available as a film. Except for pregnant women and in controlled settings, buprenorphine should almost always be prescribed in the buprenorphine-naloxone formulation to prevent misuse. See chapter 7 for further discussion of studies of the buprenorphine-naloxone combination.

Because of the risk of precipitating withdrawal, when starting a patient on a buprenorphine-naloxone taper for opioid detoxification, the patient should be in visible opioid withdrawal (i.e., have objective signs of withdrawal as measured on the COWS). Typically, this means a COWS score of 12 or greater. Tapering schedules (doses and lengths of taper) vary by institution, and only physicians with DATA waivers are allowed to prescribe buprenorphine-naloxone. Two examples of buprenorphine-naloxone tapers are given in Table 5.10.

If a longer period of time for detoxification is available, such as in an outpatient setting, the buprenorphine dose could be tapered by 2 mg every 5 days.

A Cochrane review (Gowing & White, 2009) found that that for similar withdrawal severity, withdrawal symptoms may resolve more quickly with buprenorphine compared with methadone. Patients treated with buprenorphine are more likely to complete the detoxification phase of treatment than those treated with clonidine and lofexidine.

In an NIDA study of predictors of outcome for short-term medically supervised opioid withdrawal, medication type was the single best predictor of retention in treatment and successful detoxification, with a higher percentage of patients randomized to buprenorphine-naloxone staying in treatment longer and completing detoxification (Ziedonis et al., 2009).

For the patient who has been on buprenorphine-naloxone maintenance treatment and wishes to taper off of the medication, a slow taper is recommended to ensure that the patient remains comfortable and abstinent from illicit opioids. While definitive research is lacking, this typically would be accomplished by decreasing the dose by 2 to 4 mg of buprenorphine every 1 to 2 months. If the patient starts having cravings or urges to use opioids, the taper should be discontinued to prevent relapse.

Tramadol

Tramadol is a centrally acting synthetic weak opioid agonist that is used for analgesia. Its parent compound and M1 metabolite are thought to bind to

Table 5.10 Two Sample 5-Day Buprenorphine-Naloxone Tapers

Day	Taper 1	Taper 2
1	2/0.5 mg q4hr PRN withdrawal (up to 12/3 mg in 24 hr)	8/2 mg once
2	2/0.5 mg q6hr PRN withdrawal (up to 8/2 mg in 24 hr)	6/1.5 mg once
3	2/0.5 mg q8hr PRN withdrawal (up to 6/1.5 mg in 24 hr)	4/1 mg once
4	2/0.5 mg q12hr PRN withdrawal (up to 4/1 mg in 24 hr)	2/0.5 mg once
5	2/0.5 mg once PRN withdrawal (up to 2/0.5 mg in 24 hr)	2/0.5 mg once

mu-opioid receptors and also inhibit norepinephrine and serotonin reuptake. Tramadol, if taken regularly, has a withdrawal syndrome similar to opioid withdrawal syndrome. It is currently not a scheduled medication by the DEA; however, some states have recognized this medication's abuse potential and classified it as a Schedule IV drug.

Some studies have investigated tramadol as an agent for opioid detoxification. An early retrospective chart review study that compared 59 patients detoxified with tramadol with 85 patients detoxified with clonidine found that patients taking tramadol had a 23% lower chance of leaving against medical advice than those detoxified with clonidine (Sobey et al., 2003). A retrospective cohort control study done by Tamaskar and colleagues (2003) compared tramadol to buprenorphine for its effectiveness in heroin detoxification. Sixty-four patients were enrolled in the study, and patients on both detoxification regimens had comparable lengths of stay and CINA scores. A recent prospective study in India found that tramadol was more effective than clonidine in treating symptoms of heroin withdrawal (Chattopadhyay et al., 2010).

Tramadol's use is limited by its potential to cause seizures at doses above 400 mg daily. At this time there is a larger evidence base for using clonidine, buprenorphine, and methadone for opioid withdrawal than tramadol.

Rapid and Ultra Rapid Detoxification

Most patients want to be detoxified from opioids as rapidly and painlessly as possible. At the center of all rapid detoxification treatment is the use of an opioid antagonist such as naltrexone or naloxone. The idea is to displace the opioid agonist from receptor sites as quickly as possible. This invariably will precipitate a severe withdrawal in patients who are opioid dependent.

In the 1980s, a procedure was developed whereby patients were given an increasing dose of naltrexone with a combination of clonidine, nonsteroidal anti-inflammatory drugs, and benzodiazepines to help ease the discomfort of withdrawal (Riordan & Kleber, 1980).

In the 1990s, an ultrarapid detoxification procedure was developed by anesthesiologists that involves placing patients under sedation or general anesthesia before giving them naloxone. The patients are sedated for several hours, and the opioid antagonist is switched to naltrexone. Before leaving the facility, patients are typically given a naltrexone implant (which is not an FDA-approved route of administration for naltrexone). This procedure is costly, $7,500 to $10,000, and deaths following the procedure due to complications have been reported (Hamilton et al., 2002). A Cochrane review by Gowing and colleagues (2010) analyzed nine studies, eight of which were randomized controlled studies that involved a total of 1,109 subjects. These investigators found that antagonist-induced withdrawal is more intense but less prolonged than withdrawal managed with a tapering dose of methadone. They also found that naltrexone induction could be performed more quickly with antagonist-induced withdrawal than withdrawal managed with clonidine. There was a higher risk of adverse events with heavy versus light sedation and with the antagonist approach overall compared with other forms of detoxification.

Stimulants

Stimulants are drugs that act on the central nervous system to inhibit sedation, increase energy, and decrease appetite. The primary stimulants of abuse in the United States are cocaine and the amphetamine derivative, methamphetamine. Recently popular drugs of abuse are "bath salts" or "plant food," which are synthetic cathinones with the chemical names methylenedioxypyrovalerone (MDPV), methylone, and mephedrone. Some drugs in this class are Schedule I drugs, whereas others are prescribed for the treatment of attention deficit hyperactivity disorder or narcolepsy, and others are prescription weight-loss medications.

Pharmacology of Stimulants

Absorption

Cocaine is used in different ways. Its absorption orally (chewed) takes 1 hour, with 75% metabolized in the liver on first pass and only 25% reaching the brain. Intranasally, only about 20% to 30% is absorbed, with peak levels within 30 to 60 minutes. When cocaine is smoked (i.e., crack cocaine), the absorption is rapid and complete with onset of effects in seconds. Intravenous use bypasses all barriers to absorption and places the drug immediately into the bloodstream, with onset of effects within 30 to 60 seconds. The oral absorption of amphetamines occurs within 1 hour, whereas intravenous and intranasal absorption occur within seconds. The bioavailability of insufflated methamphetamine is about 79%. The use of "ice" or "crystal meth" (freebase methamphetamine) is similar to use of crack cocaine, with almost immediate absorption. Bioavailability of smoked methamphetamine ranges from 67% to 90%, and this is in part based on the technique of the smoker. MDPV, methylone, or mephedrone (chemicals found in "bath salts" preparations) are swallowed, snorted, smoked, or injected. Their pharmacokinetic properties are not known.

Distribution

Cocaine crosses the blood–brain barrier easily, and the initial concentration in brain is greater than plasma concentration. After cocaine leaves the brain, it redistributes to other body tissues because it is water soluble. It easily passes the placental barrier. Amphetamines are highly lipid soluble and are widely distributed but have highest concentrations in the kidneys, lungs, stomach, pancreas, spleen, heart, and brain.

Metabolism

Cocaine is metabolized extensively by liver and plasma enzymes and is removed more slowly from brain than from body tissues. Cocaine is metabolized to its major metabolites benzoylecgonine and ecgonine methyl ester. The half-life of cocaine is 30 to 90 minutes. Methamphetamine is metabolized by the liver by different processes, including *N*-demethylation to produce amphetamine, hydroxylation through cytochrome P450 2D6 to produce 4-hydroxymethamphetamine, and beta-hydroxylation to produce norephedrine. The half-life of methamphetamine is about 12 hours.

Elimination

Cocaine's metabolites, benzoylecgonine and ecgonine methyl ester, are excreted in the urine. Methamphetamine and its metabolites are excreted

in the urine. It is estimated that 30% to 50% of methamphetamine is excreted unchanged.

Mechanism of Action

Cocaine is a major dopamine (DA) agonist. It blocks the reuptake of DA and increases DA activity, especially in nucleus accumbens. Cocaine can also directly affect postsynaptic membranes of neurons, and the end result is a decrease in discharge rate of neurons of the nucleus accumbens and of ventral-tegmental pathway. Cocaine is also a major serotonin (5-HT) and norepinephrine (NE) agonist and blocks the reuptake transporter protein for 5-HT and for NE. Amphetamines are NE, epinephrine, and DA agonists. They increase the release of NE and DA from presynaptic neurons in central nervous system. They also increase the release of DA in mesolimbic pathway. The release of DA in basal ganglia leads to stereotypic behavior called "punding" or "tweaking." MDPV is thought to function as a DA and NE reuptake inhibitor.

Symptoms of Stimulant Intoxication

Stimulant use is likely to be in a binge pattern rather than consistent, daily use. Often, the user will go on "runs" of heavy use that may last a few days. Symptoms of stimulant intoxication include the following:

- Agitation/Irritability
- Insomnia
- Pressured speech
- Anxiety
- Transient paranoia
- Hypersexuality
- Paranoid delusions
- Hallucinations: auditory > visual > tactile ("cocaine bugs")
- Decreased appetite
- Increased physical activity
- Stereotyped behaviors, such as skin picking
- Dilated pupils
- Bruxism
- Increased blood pressure
- Cardiac arrhythmias
- Chest pain
- Nausea, vomiting, diarrhea
- Increased body temperature
- Violence
- Seizures

Symptoms of Stimulant Withdrawal

The binge is followed by a period in which there is little or no use, and the patient is in stimulant withdrawal; this often referred to as the "crash." The symptoms of stimulant withdrawal are very different from what is seen with alcohol, sedative-hypnotic, or opioid withdrawal and do not typically require medical monitoring. Many of the symptoms are essentially opposite of those seen during intoxication. These symptoms will typically

last a few days but may persist for weeks in some individuals and include the following:

- Depression
- Hypersomnia
- Fatigue
- Anxiety
- Irritability
- Poor concentration
- Psychomotor retardation
- Increased appetite
- Paranoia
- Drug craving

Cannabis

Cannabis is a drug that is currently highly debated. It is classified as a Schedule I drug by the DEA, meaning that it has no current accepted medical use and high potential for abuse. However, 18 states plus Washington, DC, allow for the use of "medical marijuana," and marijuana has been used to treat conditions from anxiety to spasticity from multiple sclerosis. At the time of this writing, there are no major medical associations that support "medical marijuana" legislation. See the ASAM policy statement at http://www.asam.org/advocacy/find-a-policy-statement/view-policy-statement/public-policy-statements/2011/12/15/medical-marijuana for a summary of concerns about medical marijuana. In addition to "medical marijuana," two states, Colorado and Washington, legalized marijuana for recreational use in 2012.

Of note, "spice" or "K2" and other synthetic cannabinoids have grown in popularity over the past 3 years and can produce symptoms of intoxication similar to cannabis intoxication. However, they have produced other symptoms that have prompted calls to 911, poison control centers, and visits to the emergency department and admissions to hospitals. People who have used these substances have had seizures, severe panic attacks, tachycardia, hypertension, nausea and vomiting, psychosis, and altered mental status. In 2009, poison control centers received 14 calls about synthetic cannabinoids, and in 2010, the number of calls about these substances grew to 2,874. On March 1, 2011, the DEA made the synthetic cannabinoids a Schedule I drug. Previously available in convenience stores and "head shops," these synthetic drugs are now banned in 41 states but are still available for purchase on the Internet.

Pharmacology of Cannabis

Absorption

Cannabis is typically inhaled or taken orally in some sort of food (e.g., brownie). Oral absorption is about 90% to 95%, but oral bioavailability has been reported to be 10% to 20%. Bioavailability through inhalation of smoked cannabis has been reported to be 2% to 56%.

Distribution

Delta-9-tetrahydrocannabinol (THC) is rapidly distributed into the tissues. It is highly lipophilic. It has a large volume of distribution and is slowly eliminated from body stores.

Metabolism

THC is largely metabolized by the liver through Phase I and II metabolism. The brain, lung, and intestines may also contribute to metabolism. The half-life of THC is about 3 to 4 days.

Elimination

Within about 5 days, about 80% to 90% of the THC is eliminated, with 65% of it being excreted in the feces, and 20% of it being excreted in the urine.

Mechanism of Action

Cannabis exerts its effects by binding to the CB_1 receptor in the brain.

Symptoms of Cannabis Intoxication

Typically, when someone thinks of a person with cannabis intoxication, they think of the stereotypical experience of a relaxed person with bloodshot eyes and the "munchies." Not everyone has this type of experience; some people experience paranoia or become psychotic with the use of cannabis. Below are possible symptoms of cannabis intoxication.

- Euphoria
- Hunger
- Relaxation
- Anxiety
- Panic
- Paranoia
- Nausea
- Impaired short-term memory
- Pupillary constriction
- Conjunctival injection
- Headache
- Mild tachypnea
- Orthostatic hypotension
- Impaired motor coordination
- Slowed reaction time
- Slowed information processing

Symptoms of Cannabis Withdrawal

It is clear that many users do not experience a significant withdrawal syndrome, and until recently, most people did not think there was a withdrawal syndrome from cannabis. Over the past several years, researchers have defined a cannabis withdrawal syndrome that starts within about 24 hours after a patent stops using cannabis. It appears to be more common in frequent, heavy users of cannabis. Symptoms are not life threatening but can cause a patient to resume use of cannabis through negative reinforcement. Typical symptoms of withdrawal are listed below.

- Anxiety
- Restlessness
- Irritability
- Insomnia
- Decreased appetite
- Anger or aggression

- Depressed mood
- Tremor
- Sweating
- Fever, chills
- Stomach pain
- Nausea
- Headache

There is no treatment for cannabis withdrawal. Withdrawal symptoms are usually time limited, although on occasion nonaddictive medications may be used to treat symptoms such as depression, insomnia, and anxiety.

Hallucinogens

Hallucinogens are also referred to as psychedelics or psychomimetics. They are taken orally and alter sensory experiences, may produce hallucinations, and often have adrenergic effects. This class of drugs includes a diverse class of substances, including mescaline, lysergic acid diethylamide (LSD), ecstasy (3,4-methylenedioxy-*N*-methylamphetamine; MDMA), and psilocybin ("shrooms").

Pharmacology of LSD

LSD is reviewed here because it is the best studied.

Absorption

LSD is rapidly absorbed from the small intestine.

Distribution

LSD is more than 80% protein bound and enters the brain, liver, spleen, and lungs.

Metabolism

LSD is metabolized by the liver. Its metabolite, 2-oxy-lysergic acid diethylamide is inactive. The half-life of LSD is about 3 hours.

Elimination

About 80% of LSD is eliminated through biliary excretion, and it is also excreted in the urine.

Mechanism of Action

Hallucinogens are 5-HT_{2A} receptor agonists or partial agonists.

Symptoms of Hallucinogen Intoxication

- Euphoria
- Spiritual insight
- Intensified or distorted perception
- Depersonalization
- Agitation
- Paresthesia
- Headache
- Piloerection
- Diaphoresis
- Tachycardia
- Hypertension

- Depression
- Confusion
- Hallucinations
- Anxiety
- Paranoia
- Nausea, vomiting
- Tremor
- Hyperreflexia
- Seizures
- Urinary retention
- Dizziness

Symptoms of Hallucinogen Withdrawal

There is no evidence for a clinically significant withdrawal syndrome from hallucinogens. Regular users of hallucinogens may experience fatigue, anhedonia, and irritability when they become abstinent from one of these substances, and this is usually time limited.

Hallucinogen Persisting Perception Disorder

Some patients will complain of "flashbacks" from prior episodes of hallucinogen intoxication. They may complain of perceptual symptoms that were experienced during previous "trips," such as geometric hallucinations, false perceptions of movement in the periphery, flashes of color, halos around objects, and intensified colors.

Dissociative Drugs

The dissociative class of drugs includes phencyclidine (PCP), ketamine, and dextromethorphan. When abused, these drugs cause experiences of depersonalization and derealization. Those who use these drugs may also experience hallucinations.

PCP was originally marketed as a schedule IV anesthetic but was taken off the market in 1965 because of a high rate of complications including postoperative delirium and psychosis. It continued to be marketed for veterinary use until 1978. As a drug of abuse, PCP is taken orally or intranasally, and is injected or smoked.

Ketamine is still used for anesthesia. As a drug of abuse, it is used orally, intranasally, and by injection. Dextromethorphan is a cough medication that suppresses the medullary cough center. In high quantities (up to 1,500 mg), it causes dissociative effects when taken orally.

Use of dextromethorphan ("DXM," "robotripping") is typically by adolescents because this medication is available over the counter. Dextromethorphan is used in cold preparations, often combined with other medications, including acetaminophen. Therefore, those using these medications regularly to get high may be inadvertently using high doses of acetaminophen. The clinician should be certain to ask which type of medication the patient is using and conduct appropriate tests when the patient presents for evaluation (e.g., acetaminophen level if clinically intoxicated and using a preparation containing acetaminophen, as well as transaminase levels).

Pharmacology of PCP and Ketamine

Absorption

PCP is rapidly absorbed from the small intestine. Ketamine is poorly absorbed when taken orally and undergoes first-pass metabolism to its active metabolite, norketamine.

Distribution

PCP and ketamine have a high volume of distribution. They are lipid soluble and are rapidly distributed to the brain and accumulate in the adipose tissue.

Metabolism

PCP is metabolized by the liver through oxidative hydroxylation. Ketamine is metabolized by the liver by CYP3A4, 2B6, and 2C9 isoenzymes to its active metabolite, norketamine.

Elimination

Less than 10% of PCP and less than 4% of ketamine are excreted unchanged by the kidneys. The half-life of PCP ranges from 7 to 46 hours (average of 21).

Mechanism of Action

Dissociative drugs are *N*-methyl-D-aspartate (NMDA) receptor antagonists. NMDA receptors normally bind glutamate, the major excitatory neurotransmitter in the brain.

Symptoms of Dissociative Drug Intoxication

- Horizontal/vertical nystagmus
- Tachycardia
- Hypertension
- Ataxia
- Dysarthria
- Numbness
- Hyperreflexia
- Sialorrhea
- Stage II or III anesthesia
- Stroke
- Heart failure
- Seizures
- Rhabdomyolysis
- Acute renal failure
- Coma
- Death

Symptoms of Dissociative Drug Withdrawal

There is no recognized withdrawal syndrome for dissociative drugs. Tennant and colleagues found that daily chronic (>3 months) users who stop using phencyclidine may experience depression, anxiety, restlessness, irritability, low energy, sleep disturbance, and craving (1981). Regular heavy users of dextromethorphan who discontinue use may experience dysphoria, insomnia, and cravings for the drug (Miller, 2005).

The following two cases synthesize the concepts presented in the chapter and allow you to develop treatment recommendations.

Case Vignette 1

Frank, a 36-year-old single African American male, presents to the emergency department requesting detoxification. The patient reports he has been drinking a fifth of vodka daily for the last year and before that he was drinking a case of beer daily since he was 24 years old. He denies any significant period of abstinence from alcohol. He denies the use of other drugs but does smoke 1 pack of cigarettes daily. He has never tried to stop drinking before, so he states he has no history of withdrawal seizures or delirium tremens. Frank denies any significant medical and psychiatric history, but states he hasn't been to a doctor in years. He is homeless and has been staying in a shelter or on the street for the past 3 months. On examination, you notice flushed facies, beads of sweat on his forehead, impaired concentration, slightly dysarthric speech, and a notable postural tremor. He states his last drink was about 4 hours ago. Vital signs show blood pressure 145/100 mm Hg, pulse 109 beats/minute, respiratory rate 16 breaths/minute, temperature 98.6° F. A breathalyzer reading is 0.289. His WAS score is 16.

- What would be your treatment recommendation for Frank?
- What medication would you use for detoxification?
- Would you favor giving Frank a benzodiazepine taper or symptom-triggered schedule of medication for alcohol withdrawal?

Answers to Case Vignette 1

What would be your treatment recommendation for Frank?

Based on Frank's withdrawal symptoms while still having a very high breathalyzer reading, Frank will probably need inpatient detoxification. Additionally, Frank is homeless, and it would be best if he had a supportive environment in which to stay during the detoxification. A physical examination and basic laboratory tests, including a complete blood count, comprehensive metabolic panel, and serum magnesium level, should be drawn.

Frank's laboratory test results come back and show the following:

Total protein	5.3
Albumin	3.9
Total bilirubin	0.7
Direct bilirubin	0.3
ALT	257
AST	363
Alkaline phosphatase	89

What medication would you use for detoxification?

Based on Frank's elevated liver enzymes, oxazepam or lorazepam would be the recommended agent. The choice between these two medications would depend on whether you want a medication with fast or

intermediate onset of action and also on the route of administration you need. Typically, oral route of delivery is adequate; however, if a patient is not taking anything by mouth or if the withdrawal becomes more severe, you may need to switch to an intravenous route of delivery, which would favor lorazepam.

There is no indication to use a beta-blocker, alpha-2 agonist, or anticonvulsant.

Would you favor giving Frank a benzodiazepine taper or symptom-triggered schedule of medication for alcohol withdrawal?

Because Frank has never gone through detoxification before, it is hard to predict what his withdrawal will be like. Fixed dose schedules lead to more sedation and longer detoxification episodes and are thereby more expensive. Symptom-triggered dosing requires more frequent nursing assessments but leads to less sedation and shorter detoxification episodes.

If Frank is going to a detoxification unit, you may wish to start him on a symptom-triggered schedule. If he is going to a medical-surgical unit, where things are chaotic and frequent nursing assessments may not be practical, it may be best to start him on a fixed dose or taper dosing schedule to ensure that he gets the medication of a regular basis.

Case Vignette 2

Cindy is a 33-year-old single white woman who presented to the emergency department seeking detoxification from heroin. She started using pill opioids recreationally at 21 years of age with her boyfriend. At first she started with Vicodin and Percocet, swallowing the pills whole. Eventually, she started buying oxycodone tablets and using them intranasally. About 9 months later, she started using heroin intranasally because it was much less expensive than the pills she was buying off the street. Soon she was using 20 bags of heroin intranasally daily, so she started injecting the heroin. She is currently injecting 25 bags daily. She has gone through detoxification before and has been to several rehabilitation facilities. Her longest period of abstinence is 6 months, which she achieved after completing a 28-day residential rehabilitation program, living in a three-quarter house, and participating in Narcotics Anonymous meetings.

Cindy denies the use of alcohol and other drugs. She smokes 1 pack per day of cigarettes. She recently lost her job as a server at a restaurant for coming to work late and calling off due to being in withdrawal and having to find heroin to avoid being "dope sick." She is about to be evicted from her apartment because of nonpayment of her rent.

Cindy has hepatitis C but is otherwise healthy. She denies any psychiatric symptoms, including suicidal and homicidal ideation.

Cindy's last use of heroin was about 8 hours ago. She is currently complaining of myalgia, anxiety, restlessness, hot and cold flashes, irritability, and leg cramps. On interview, you notice that she is yawning,

her eyes are moist, she is sniffling, and she has psychomotor agitation. Her vital signs are as follows: blood pressure 119/84 mm Hg, pulse 88 beats/minute, temperature 98.3° F, respirations 16 breaths/minute, and COWS score of 8.

- What is your next step?
- While Cindy is in the detox program, it is important to focus on what?

Answers to Case Vignette 2

What is your next step?
Because Cindy is of childbearing age, you should get a pregnancy test to be sure she isn't pregnant. Although women may undergo medically supervised opioid withdrawal during pregnancy, it is not recommended. Evidence shows that pregnant women maintained on methadone do better than women who undergo detoxification (see chapter 7).

After pregnancy is ruled out, and Cindy elects detoxification and not maintenance treatment, what options would be appropriate?
Cindy can be referred to an inpatient or outpatient detoxification center. The detoxification protocol used will likely be clonidine in addition to other medications for symptom management or a buprenorphine/naloxone taper.

While Cindy is in the detox program, it is important to focus on what?
During detoxification, it is important to focus on aftercare planning. Detoxification is not a treatment in itself but rather is a portal to treatment. If Cindy is not interested in an opioid maintenance treatment, such as buprenorphine-naloxone or methadone maintenance, naltrexone tablets and extended-release injection should be discussed with her and incorporated with psychosocial treatment into her recovery plan. Before starting naltrexone, baseline liver function tests should be obtained.

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Chapter 6

Screening, Diagnostic Approaches, and Essential Elements of Treatment for Substance Use Disorders

Thomas M. Kelly and Antoine Douaihy

Key Points

- Empathy is one of the strongest predictors of a practitioner's effectiveness in treating substance use disorders (SUDs).
- The therapeutic alliance is as important as the type of treatment you provide.
- Important areas of ethical and professional responsibilities include confidentiality, professional honesty and transparency, duty to protect, maintaining practice within the boundaries of expertise, and utilizing evidence-based approaches.
- The validity of substance use self-reports varies according to interview setting, clinical population, and patient motivation.
- Most screening instruments for substance abuse are too long to be used in clinical practice.
- Brief Screens are used to detect the possible presence of substance use at levels that require an assessment to determine the need for treatment.
- They are adaptable to clinical interviews, but no one instrument works well with all clinical populations.
- Urine drug testing is a fundamental clinical tool that can be used as more than just a verification of the presence of drug.
- Assessment is a multidimensional process that helps formulate a comprehensive treatment plan and objectives for change. This covers all domains of functioning.
- Diagnosis determines whether a patient meets specific criteria for a particular SUD but does not alone determine the process of treatment.
- The most important element of determining the existence of a "disorder" is whether substance use is causing subjective distress or objective impairment.

People with substance use disorders (SUDs) and their significant others are frequently seen in diverse clinical settings, including physician offices, emergency rooms, and behavioral health programs. In this chapter, we first address the basic principles that govern the therapeutic encounter focusing on engagement strategies. We then discuss evidence-based practices on how to screen for substance use problems and perform a comprehensive assessment of patients with SUDs. The last section addresses varying perspectives and approaches to diagnosis and treatment of SUDs.

Therapeutic Alliance

Establishing the therapeutic alliance with the patient is considered the practitioner's most fundamental tool. The best way to enhance engagement in the therapeutic encounter is to develop an relationship that engenders collaboration. This begins by interacting with the patient in ways that maximizes the potential for the patient to see the practitioner as someone who is open-minded, flexible, honest, non-judgmental, motivated by a desire to work with him or her, and curious to learn more about his or her needs. Patients with SUDs have experienced significant disruptions of their moral and value systems and exploration of values is a crucial component of the therapeutic encounter. The practitioner's approach is an important catalyst to this process. Practitioners who hold an attitude of therapeutic nihilism about the potential for change in substance abuse behavior will likely convey this to their patients and reduce the prospects for a positive therapeutic alliance. Similarly, overidentification with a patient's feelings of paralysis, helplessness, or poor sense of self often leads to poor treatment outcomes. Practitioners must be well-informed and trained regarding the effect of substance use on patients and be able to control their own personal reactions. Relating to patients in this way strengthens the therapeutic alliance and facilitates treatment.

Patient collaboration and openness can be enhanced by (1) establishing a safe atmosphere in which the patient can achieve growth through sharing and processing; (2) promoting "safety" by assuring patients that what they share with the practitioner remains confidential (while also informing them of any limits of confidentiality); (3) maintaining an empathetic approach; and (4) being "transparent," or otherwise openly discussing with patients what is being done (asked) and why it is important to the therapeutic process.

Establishing Safety and Confidentiality

Establishing safety is primarily related to ensuring that a patient's health care information is kept confidential. This means that patients must be interviewed in private, and it is the practitioner's responsibility to establish a safe environment for the patient. This also involves taking steps to educate patients about not discussing their drug use or any other medical matters in public areas.

After the setting where the evaluation will take place is established, the practitioner should first explain what will happen during the time that will be spent with the patient. Asking if the patient has questions at this point is not an efficient use of time, but often patients want to discuss something about their experiences before their arrival, and if necessary, practitioners should allow this for no more than several minutes. It is important not to show annoyance. Rather, it is best to remain empathetic, continue engaging the patient, and address any questions or concerns. How the first few minutes of the evaluation are handled and the nonverbal behavior of the practitioner either greatly enhances or detracts from the therapeutic alliance. This was noted decades ago by one of the most well-known students of the interpersonal experience in psychiatry (Sullivan, 1954). Occasionally a patient clearly wants to take more time to share than is possible before starting the evaluation. In these cases the practitioner can tactfully reassure the patient that there will be time to discuss such things later but that it is also necessary to start the formal evaluation at this time.

The next part of the evaluation process extends the issue of establishing safety: practitioners should explain that patient-related information will not be revealed to anyone unless the patient requests it in writing. Even the fact that a person is receiving treatment is confidential. Practical, commonsense behaviors include closing the door whenever you are discussing private information with patients or colleagues and never discussing patients in public places. Because patients with SUDs may feel particularly stigmatized, there are extra measures in place to protect confidentiality.

A U.S. federal regulation (42 Code of Federal Regulations (CFR), part 2) provides special protection of the confidentiality for patients seeking an evaluation for SUDs.. This regulation applies to any treatment programs receiving direct federal funding or tax-exempt status. It requires that any substance-related information is kept separate from other health care information and protected from subpoena or warrant if the records are requested. Even deceased patients are afforded the protection of confidentiality. Nor can next of kin authorize release of records; in such cases, 42 CFR, part 2 protects patient records.

Most important, patients must be informed about any exceptions to confidentiality. First, practitioners should be well informed about regional laws. Health care professionals are expected to reveal to authorities any threats that are imminent, foreseeable, and dangerous, such as suicidal or homicidal behaviors or major bodily harm to others. In addition, professionals have a duty to warn an intended victim or the police when a patient discloses intent to harm. Child or elder abuse is another exception

to confidentiality and must be reported to the proper authorities. Even in these situations, the practitioner is not obligated to disclose that the patient has an SUD or is in treatment for an SUD. In this way patients are protected from themselves and society is protected from patients. Furthermore, disclosing information to collaborating health care practitioners is sometimes necessary to reveal whatever is required in order for the patient to receive quality care. However, any information that is to be divulged must be discussed with the patient before its release, and the patient must sign an accepted form documenting that he or she is requesting its release. Finally, it is not appropriate to report a pregnant patient with an SUD to child protective services based solely on her use of drugs. However, other factors may weigh on this decision. Practitoners must know their agency policies and state laws and decide the best course of action on a case by case basis.

Patients should be informed that what they reveal about their drug use ***will not*** be shared with anyone, including family. This is particularly relevant when patients are being pressured by family to receive an evaluation. In such instances patients may fear that practitioners will collude with family and inform family about their substance use. Practitioners must first and foremost maintain a therapeutic alliance with the identified patient. Therefore, it is very important to explain the standards of confidentiality to the patient and family in the first therapeutic encounter.

However, this process is not designed to promote family secrets. Patients need the support of concerned family members and so practitioners should encourage patients to be open and honest about their substance use with their significant others and supportive family members. Emphasizing that the patient is responsible for initiating such discussions and that such openness is therapeutic promotes patient responsibility for their recovery.…Furthermore, such openness improves the potential for the patient to receive the necessary social and emotional support to facilitate change during treatment.

Opening of the Assessment Process

No topic other than what motivated the patient to seek help or what transpires between the patient and practitioner should be discussed. Questioning about demographic information or issues related to payment or insurance should not be conducted unless the patient brings them up in relation to the evaluation. When practitioners bring such topics up as part of the evaluation, they are tacitly suggesting that such topics are more important than the patient's concerns and struggles. Similarly, it is important to remain focused throughout the therapeutic encounter and avoid "chat" that is unrelated to the patient's treatment needs. In one study the amount of informal chat was inversely related to the patient's motivation for change and retention in addiction treatment (Banmatter et al., 2010).

Although it may seem elementary to state it outright, it is important not to be interrupted during evaluations, except in dire emergencies. Practitioner and patient telephones should be turned off and no attendion should be paid to the computer or other distractions. It is best to refrain from note taking because this can potentially reduces eye contact and other attending behaviors and puts too much emphasis on the clinical nature of the assessment. Practitioners should train their memories so that they can conduct an hour-long interview without the need for note taking.

There are ways to improve memory for these purposes. This is done primarily by using summary statements of three types: collecting, linking, or transitional summaries. Collecting summaries synopsize what is known to a particular point and usually happen in the midst of the session. Linking summaries connect what the patient shared at the moment and what they mentioned earlier in the encounter, and transitional summaries are used at the end of the encounter, or to shift the focus of the session. Every 10 to 15 minutes, practitioners should stop and summarize what has been discussed in order to maintain a sense of organization to the assessment process. This practice reminds the patient and practitioner of the discussion content, and encourages the patient to correct, clarify and elaborate on his or her experiences.

Strategies for Facilitating Sharing

Consistent with a motivational interviewing (Miller & Rollnick, 2002) paradigm, it is best to start the assessment process by asking patients an open-ended question. An opening such as, "I don't know much about you, please share with me why you decided to see me today" is an appropriate way to begin. In specialized settings such as mental health or addiction clinics, this is always best practice because the "meta-message" is that patients are not being told they "have a problem" with substances. Rather, they are given the opportunity to share what they believe their problem to be. If questioned by patients in a "So what do you want to know?" manner, practitioners should say that they want to understand the patient's perspective of why they decided to seek treatment, or what he or she believes are the concerns or problems. By communicating this verbally, as well as nonverbally, patients are given the message that the practitioner has no preconceived ideas or "agenda." This style of interviewing reduces defensiveness and enhances the therapeutic relationship. Often patients become willing to discuss their perspectives about how substance use affects their lives, even if they started sharing about how substances are not the problem.

Maintaining an Empathic Approach

One of the most powerful predictors of positive outcomes in treating SUDs is practitioner empathy. Carl Rogers (1965) identified "accurate empathy" as one of the three important conditions that a practitioner or counselor must provide to promote change in patients. The other two conditions are unconditional positive regard and genuineness. These conditions can be associated with the particular practitioner's approach. What Rogers defined as "empathy" is the ability to listen to patients and accurately reflect back the core meaning of what they have stated; this is called ***reflective listening***. Reflective listening clearly helps the patients better understand their internal processes and experiences in a nonjudgmental atmosphere. The critical issue is to put the focus on patient behaviors and experiences that they discuss as the source of their problems. This approach encourages patients to explore their past and to do so with someone who listens with unconditional interest and accepts their experiences in a non-judgmental manner.

Questions should be formed and statements made that do not suggest the practitioner believes that the patient "has a problem" with substance use. Even validated screening instruments sometimes contain items that equate substance "use" with "abuse" during screening. For example, the Drug Abuse Screening Test (Yudko et al., 2007) contains several questions that use the term "abuse" when the neutral term "use" would be a better choice. Patients are often very sensitive to this issue and may react very differently to the question, "Do you ever feel bad or guilty about your drug abuse?" versus "Do you ever feel bad or guilty about your drug use?" One form of the question implies that the practitioner assumes the patient is abusing substances, whereas the other does not. An important point in this context is that patients often do not necessarily think of themselves as "having a problem" with substance use if they have not yet suffered major consequences from it.

Similarly, patients may respond with irritation and possibly anger to terms and labels such as "alcoholic" or "addict." Practitioners should avoid trying to impose these diagnostic labels. Classic addiction treatment suggests that use of such labels helps patients "accept their illness." However, applying them often creates resistance and impedes establishing the therapeutic alliance. Practitoners are sometimes asked what they think about use of such terms. The best response to avoid argumentation is to state that it is not necessarily warranted or helpful to apply labels and that the focus should be on ***behaviors and experiences*** the patient brings up in relation to their substance use. Some patients do actually think it is helpful if they can "accept" that they are an addict or have an addiction. This attitude can indicate that they accept the need for treatment, and practitioners should take the stance that this is fine, if the patient finds it helpful. However, research shows no evidence that accepting labels is a prerequisite to change. Within the 12-step philosophy, it is up to the individual to decide whether adopting the identity as an "alcoholic" helps him or her with their recovery. The overarching issue is that it is best to leave the decision of labeling up to the patients. With this approach, even patients who are not initially open in the interview often become more

engaged. Patients who are closed or guarded initially misrepresent their substance use because they expect practitioners to judge them. Patients are more inclined to be objective when they realize that the practitioner is willing to accept their perspectives and is not interested in imposing his or her perspective on them. An atmosphere of trust is established, and patients are often relieved to find that the practitioner is accepting of them "where they are."

Transparency

Of course, occasionally patients are reluctant to be open about their substance use despite practitioner efforts to promote engagement. Different options often lead to either a continuation of the conversation or a termination of the assessment by the patient. Any problems that may reduce collaboration can often be decreased by lessening the professional distance that is a usual part of the "doctor–patient" relationship. First, the approach should be one of informality. In most cases a substance use assessment does not involve touching the patient, as is done during a physical examination. Furthermore, substance abuse assessments can be conduced without useof written self-reports or cformal psychological tests. Therefore, informality can be communicated to the patient by indicating that the only thing that is expected from the patient is to talk with the practitioner during the therapeutic encounter. The practitioner will then formulate his or her evaluation and, possibly, provide some recommendations.

This approach provides the patient with a view of what to expect and often reduces the patient's level of anxiety. If the practitioner asks about something that the patient indicates he or she does not feel comfortable discussing, it should be made clear that this will be respected. A response such as the following works well: "I respect your decision not to discuss it with me. I am asking about it because we know from research and clinical work that _____. can sometimes be an important area to explore, given what led you to come in. However, it is entirely up to you to decide whether or not you want to discuss it."

This statement includes a very important clause that essentially tells the patient that your recommendation, as a professional who has expertise in treatment of SUD, is to discuss a particular area of inquiry. What is not said, but is tacitly indicated, is that the patient is taking responsibility for avoiding something a professional believes should be assessed. Implied here also is that exploring the subject could possibly result in avoiding future problems. However, it is best not to discuss this last point explicitly because pointing it out to the patient may sound argumentative and could be taken as a confrontation that may promote discord in the relationship.

The foundation of this approach is that ending an assessment simply because the patient is reluctant to discuss what the practitioner wants explore is not therapeutic. Ending an assessment because the patient is unwilling to follow the practitioner's agenda indicates that the practitioner is unwilling to do exactly what is expected of the patient, that is to is, explore alternatives, be flexible, negotiate and consider change. Simply recognizing that the conversation does not have to be about substance use and suggesting that the patient talk about whatever he or she wants can keep the discussion going and strengthen the therapeutic alliance.

This approach often works with adolescents because of their ambivalence related to feeling controlled. Adolescents often want to assert their independence and, in their view, this precludes considering different perspectives as methods for working through problems, e.g., substance induced impairment, problems in relationships with parents or legal problems. However, adolescents are often willing to negotiate, if they view

the practitioner as someone who will be open and fair with them. When a practitioner allows the patient to set the agenda he/she models that flexibility is accepted, even encouraged. This technique can decrease anxiety and otherwise tip the scale for the patient to become more engaged and reveal more about himself or herself as a result of increased trust in the practitioner. Another helpful strategy is to ask patients about what they liked and did not like about their past treatment and invite them to explore these experiences. In this way the practitioner can emphasize how he/she works differently, which may make the treatment experience more fulfilling and beneficial to the patient.

Transparency includes being clear about why the practitioner is willing to be flexible in working with the patient. This involves practitioners clearly stating their belief and experience that they can work with patients to achieve their goals when the relationship is based on openness and honesty. Finally, however, practitioners must also make it clear that they do not "take it personally" if the patient decides to terminate the relationship. Many things can affect such a decision and it is sometimes better for the patient to refer him or her on to a colleague. This attitude is best communicated by stating that self-determination is valued above all because it is the patient who will experience either the benefits or consequences of their decisions.

Patients with antisocial personality disorder often minimize or lie about their substance use in an attempt to manipulate practitioners into getting something from the "system." This can include medications from the health care system or monetary benefits from social welfare programs. With the exception of medications, practitioners conducting drug and alcohol evaluations rarely have any direct control over benefits from the health care and social welfare system, although patients may perceive things differently. Practitioners who believe that a patient is attempting to manipulate them should be very open about the fact that they do not have the influence the patient believes they do in determining whether a person is eligible for welfare or disability payments. In the case of patients seeking medications that are not safely and clinically indicated, this should also be met with honesty that ethical practitioners will not prescribe medications in ways that may potentially harm patients, for example, when medications are being sought for illicit use to further drug dependence. Discussions such as these should be closely followed by the statement that the practitioner's mission is to help people stop abusing substances and that he or she will assist the patient to obtain treatment for substance dependence, if he or she is willing to make that their goal.

Validity of Self-Reports on Drug and Alcohol Use

Research on the validity of drug use self-reports is contradictory. Some investigators have found support for the validity of patient self-report in comparison with toxicology screenings while others have not. For example, patients who are in emergency departments for an injury and have been using alcohol are likely to be honest about such use because the alcohol use is apparent to medical staff. They may be less forthcoming about use of other drugs if they believe that the medical staff will not detect them. Blood screenings, of course, are often used to determine the validity of self-reports. Veterans seeking treatment for post-traumatic stress disorder (PTSD) have been found to be honest about their drug use because they do not expect it to interfere with their request for psychiatric treatment. However, high school students have been found to be dishonest about drug use on written surveys because they cannot be convinced that the person obtaining the information won't use it against them. Other motivations can affect veracity, for example, pregnant women may underreport certain drug use–related behaviors because admitting to them during pregnancy may cause guilt or shame. In particular settings such as criminal justice systems and child protection agencies, additional problems interfere with honesty on self-report, such as fear of being incarcerated or losing parental custody. The primary inference to be drawn from this research is that the interview setting, clinical population, and motivations are the most important variables affecting the validity of patient self-report.

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Importance of Valid Screenings for Substance Use Disorders

A valid screening for substances of abuse is the most important objective during the first interview with patients who may be abusing drugs because of the effects substance use could have on other psychiatric and medical conditions. Valid screenings for substance abuse is vital in some circumstances because it can protect patients from harm that can occur as a result of drug withdrawal syndrome. For example, withdrawal from alcohol and benzodiazepines can be lethal, and patients must be informed about that in order for them to appreciate the significance of being honest during assessment.

The SUDs most often encountered include (1) intoxication, (2) withdrawal (3) abuse, and (4) dependence. However, epidemiologic evidence suggests that the rate of SUDs with other non–substance-related conditions, known as dual or co-occurring disorders, is quite high (Kessler et al., 2005). Effective treatment must be based on treatment planning that takes all available clinical data into account. Therefore, patients who report symptoms of depression or anxiety without alluding to their use of substances should be asked directly about substance use. For example, major depression commonly coexists with SUDs. These conditions can have different etiologies and often require different treatments. However, substance-induced mood, anxiety, and psychotic disorders, which commonly occur within a month of substance intoxication or withdrawal, will require a different approach because an SUD is the only cause for the disorder.

Medical or psychological problems are often associated with SUDs. For example, further exploration of substance use should be pursued with patients who report having gastrointestinal problems. Short-term problems with other drugs can include psychological blackouts or flashbacks. Long-term problems can include an "amotivational syndrome" often associated with cannabis dependence (Schwartz, 1987). Patients with amotivational syndrome often report that they are depressed and have low energy and motivation but do not associate the syndrome with cannabis use.

In clinical settings where active treatment is occurring, such as in pain clinics where opiates are commonly prescribed, it is important to engage patients so that they feel comfortable to openly disclose any use of other central nervous system depressants, such as alcohol. It is vital to make these patients aware of the risk for overdose and death if they use a combination of central nervous system depressants. Similarly, patients taking amphetamine-based medications for treatment of Attention Deficit Hyperactivity Disorder should not be using any other drugs but should especially avoid ones that may interact with the stimulating effects of amphetamines. Finally, patients who are being treated for co-occurring conditions such as drug dependence and major depression should be informed that the antidepressant effect of any medication they are prescribed could be potentially compromised or nullified if they continue to overuse other drugs.

Combining biological measures such as laboratory tests with self-reports will, of course, enhance accuracy of screening data, particularly when

doubt about self-report is an issue. Individuals are more likely to reveal accurate information about their drug and alcohol use if they believe that the information will be corroborated by other tests. This is commonly referred to as the "bogus pipeline" because patients will be honest if they believe any lies will ultimately be revealed.

When choosing a biological test, it is important to consider factors such as the nature of the substance, half-life of the tested substance, biotransformation and metabolism of the substance, sensitivity and specificity of the test, and purpose and cost of the test. Biological tests will be discussed more in detail in the next section, "Screening for Substance Use Disorders."

Screening for Substance Use Disorders

Screening is neither a formal evaluation nor a diagnosis. Screening tools are meant to detect the possible presence of a particular problem that requires an additional evaluation. When considering use of a screening test, it is important to know the cutoff point of that test, the score at which defines the optimal balance between the sensitivity and specificity of the test. Expressed in percentages, sensitivity refers to the score at which an instrument will detect a substance use disorder, with the understanding that some non-disorders will be detected (false-positives). Specificity refers to the score at which the test will detect a non-disorder, with the understanding that some disorders will be missed (false-negatives). For example, research on the Alcohol Use Disorders Identification Test (AUDIT) among a sample of ambulatory patients found that scores of 8 or above (range 0–40) is the cut point at which 95% of subjects with alcohol related impairment later in life were identified (sensitivity). Scores of 7 or below identified 85% of patients without alcohol-related impairment later in life (specificity) (Conigrave et al, 1995).

Before using screening tools in any clinical setting, it is important to discuss with the patient the rationale for its use. It is important to explain that it is a standard procedure used with all patients, give clear instructions on how to complete it, and review confidentiality related to the results.

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Screening Tools and Instruments

Screening tools are divided into three categories: particular clinical questions, instruments, and biological measures.

Clinical Questions

The one-question screen developed by the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2007) may be useful to identify heavy drinking. This single question identified 86% of individuals who had an alcohol use disorder. The question is:

- For men: How many times in the past year have you had 5 or more drinks a day?
- For women: How many times in the past year have you had 4 or more drinks a day?

For patients with an SUD in the primary care setting, the simple question asked is: How many times in the past year have you used an illegal drug or used a prescription medication for nonmedical reasons?

Instruments

Brief scales for determining drug use disorders employ simple scoring systems so that they can be used in busy clinical environments where the need is to diagnose the disorder with the expectation that patient will receive follow-up care in another clinic:

1. The best-known and most widely used is the CAGE (http://jama.ama-assn.org/content/300/17/2054.full) for alcohol abuse, as self-administered, which is a mnemonic for answering questions on (1) feeling the need to ***C***ut down on drinking; (2) feeling ***A***nnoyed when others comment on use; (3) feeling ***G***uilty about use; and (4) needing an ***E***ye-opener—or drinking in the morning—which is an indirect affirmation of using to avoid withdrawal. It is scored on a 0 to 4 scale, and scoring even 1 may be indicative of "problem drinking." Most studies have found that positive scores on the CAGE correlate with alcohol dependence and that it works well with adults but is much less valid with adolescents (Chung et al., 2000).
2. The best-known screening instrument for alcohol abuse is the Alcohol Use Disorders Identification Test (AUDIT). The AUDIT was developed by the World Health Organization (WHO) and has gained widespread acceptance. However, the AUDIT is still too lengthy to be easily used in open clinical interviews because it comprises 10 items and is scored on a 0 to 40 to scale. A score of 0 to 7 is indicative of low problem severity, whereas a score of 8 or above is suggestive of high problem severity. A parallel version for screening for drug use, the DUDIT, has been developed. The DUDIT comprises of 11 items and is scored on a scale of 0 to 44 (Voluse et al., 2012).
3. The Michigan Alcoholism Screening Test (MAST) is a self-administered test of 25 questions. The short version (SMAST) is a 13-item scale that correlated 0.90 with the MAST. This test screens for the major psychological, social, and physiological consequences of alcoholism.

4. The National Institute on Drug Abuse (NIDA) promotes screening and brief intervention in general medical settings and suggests the use of the Modified Alcohol, Smoking, and Substance Involvement Screening Test (NM-ASSIST) based on the WHO ASSIST working group. It first queries lifetime and then recent use in 12 drug classes, then the presence or absence of various diagnostic signs of alcohol and drug problems.
5. The Fagerstrom Test for Nicotine Dependence, a six-item test, measures nicotine dependence

The Addiction Severity Index (ASI; McLellan et al., 1992) is not a screening instrument but is a useful multidimensional interview examining the severity of need for treatment. The ASI measures problems in seven domains of life including: (1) medical, (2) employment and support, (3) legal consequences, (4) drug use, (5) alcohol use, (6) family and social relations, and (7) psychiatric symptoms. This multidimensional approach is most helpful in developing a treatment plan specifically focusing on problem areas that abstinence alone my not resolve. The ASI is in the public domain, but interviewers require special training to effectively use it.

Biological Measures

Biological measures are not a replacement for self-reports, as discussed earlier. Urine drug testing (UDT) is more than a verification tool of the presence of drug. UDT can be used for many reasons: for screening and early diagnosis of substance use, as an adjunct to self-report of drug use, to reinforce behavior change, to monitor medication adherence, to advocate for patients, to uncover suspected diversion, and as a part of an overall treatment plan. UDT in combination with an appropriate evaluation is used to formulate treatment decisions in different settings. The immunoassay drug tests are designed to classify a substance as either present or absent according to a predetermined cutoff threshold. It is the most common method of UDT. The sensitivity and specificity of the UDT have improved with the use of gas chromatography–mass spectrometry (GC-MS) or liquid chromatography–mass spectrometry (LC-MS). GC-MS and LC-MS specifically confirm the presence of any given drug and can identify drugs not included in the immunoassay test when the results are contested. The detection time of a drug in the urine indicates how long after using a person excretes the drug and/or its metabolites at a concentration above a specific test cutoff concentration.

The UDT is strongly influenced by the individual's metabolism, drug administration route, use of legally prescribed medications, and drug potency. A UDT immunoassay panel screens for cocaine and amphetamines, including ecstasy, opiates, oxycodone, methadone, marijuana, and benzodiazepines. Patients who are taking a prescribed opioid need to request a limit of detection testing (which depends on the laboratory and methodology, GC-MS, or LC-MS to increase the likelihood of detecting prescribed medications. The results of the testing can be used to strengthen the therapeutic alliance by emphasizing to patients that the results of such tests are confidential and provide an objective way of monitoring their use so that they can be provided with valid feedback. This technique provides objectivity that often elicits motivation and reinforces behavior change. For

example, although marijuana using patients sometimes discuss "second hand smoke," passive inhalation of marijuana does not produce positive results for tetrahydrocannabinol (THC) at typical cutoffs. Positive UDT for THC is indicative of marijuana use and positive results should be addressed in the therapeutic encounter as a substance use behavior.

UDT is indicated in patients who (1) are already receiving a controlled substance, (2) are reluctant to undergo a full assessment, (3) are requesting to be tested for a specific substance, (4) are displaying drug-related behaviors, and (5) are in drug abuse treatment programs.

A toxicology screen includes a blood alcohol level test. It is important to remember that alcohol intoxication is not just based on the blood alcohol level because patients who are severely dependent and have high tolerance may have a high blood alcohol level without showing signs of significant intoxication.

Other laboratory tests for alcohol abuse include gamma-glutamyl transpeptidase (GGTP), which is a sensitive measure of live enzyme oxidation, and carbohydrate-deficient transferrin (CDT); both are markers of heavy drinking. Elevated GGTP is also an indicator of a possible alcoholic liver disease. AST (SGOT) is elevated in 30% to 60% of patients with alcohol dependence and 80% of patients with elevated liver enzymes have alcohol dependence. Elevated mean corpuscular volume (MCV), a measure of red blood cell size, is found in certain alcohol-related nutritional deficiencies and can be associated with the effects of alcohol on bone marrow cell production.

Assessment of Substance Use Disorders

Assessment of SUDs is essential to understand the patient's substance use history and the multitude of factors that help conceptualize personalized treatment approaches. Assessment involves a combination of tasks, including: 1) a personalized history of use which incorporates information about substance use age of onset; 2) the course of the disorder, e.g., periods of most use, periods of sobriety; 3) any medical, psychosocial, and cognitive consequences he or she is experiencing; 4) level of physiological and psychological dependence; 5) motivation and/or readiness for change; 5) the presence of co-occurring psychiatric and medical disorders; and 6) other studies, including laboratory tests. The assessment process is in some ways a moving target and may change somewhat in every encounter with the patient. Understanding the multiple dimensions of SUDs and how they are intertwined is a crucial component of the assessment.

Assessment Domains

1. **Nature and extent of SUDs:** When assessing the nature, extent, and pattern of substance use, ask about quantity, frequency, variability, and routes of administration. Remember to avoid simply asking a "laundry list" of closed-ended questions. Rather, ask an open-ended question and allow the patient to tell his or her story related to the question.
2. **Medical consequences:** These include: acute effects of intoxication; risk-taking behaviors; overdoses; medical history, medical consequences from chronic use, such as liver disease, heart disease, cancers, and nutritional deficiencies; impact on other comorbid medical illnesses, such as diabetes and hypertension; history of HIV, hepatitis C virus (HCV), and hepatitis B virus (HBV) testing; HIV, HCV, HBV, and tuberculosis status; tolerance; physiological dependence; and history of withdrawal syndromes.
3. **Psychosocial and behavioral consequences:** These include impact on employment, financial problems; legal problems, family relations, interpersonal conflicts, violence, and aggression. Assess for intimate partner violence. A particular area to assess is the impact of the patient's substance use on the family. Separation and divorce are both the cause and consequence of substance use disorders (Gibb et al., 2011; Keyes et al., 2011). Children of substance abusers are 2.7 times more likely to be abused and 4.2 times more likely to be neglected than children whose parents are not substance abusers (Wells, 2009). Of course, the long-term effect of substance abuse in families is the dysfunction it causes and the generational transmission of addiction through behavioral modeling and because of the consequential psychiatric, disruptive, and addictive behaviors that the children of substance abusers develop (Copello et al., 2005).
4. **Cognitive consequences:** These include impact of substance use on cognitive functions, adaptive abilities, and intelligence (acute and chronic effects).
5. **Motivation/readiness for change:** Motivation is considered one of the most consistent predictors of how patients respond to treatment. Assessing patient motivation for change should be incorporated into the assessment process: One simple question would be: "On a 1 to 10 scale, with 1 being of no importance and 10 being of the highest importance, how important would you say it is for you to make a change in your use of the substance?" Another important dimension related to motivation that should be assessed is the patient's reasons for maintaining the status quo, or how important it is for the patient to continue using drugs (assessing benefits and drawbacks of using). This is referred to as a decisional balance technique whereby patients are formally interviewed about the aspects of drug use they view as positive and those they view as negative. Another aspect of motivation to assess is the patient's self-efficacy, defined as the patient's belief that he or she is capable of making a particular change (Bandura, 1997).

6. **Social support network:** If possible, it is important to identify the people involved in the patient's social network, such as family, friends, coworkers, and religious communities. For patients who have been involved in any mutual support groups such as Alcoholics Anonymous or Narcotics Anonymous, it is helpful to assess their reaction to the program, including whether they have a sponsor. The social support system can play a fundamental role in strengthening motivation, treatment engagement, and alternatives to drug use behaviors.
7. **Functional analysis:** This involves assessment of the patient's attitude toward substance use. It includes identifying high-risk situations, thought patterns, and decisions that trigger substance use behaviors and work with patients on analyzing their feelings and actions before and after substance use. The goal of the functional analysis is for patients to understandwhat role substance use is playing in their life. For example, it is important for patients to recognize how specific triggers such as social influences make them more vulnerable to substance use. Furthermore, patients must be able to explore and understand the consequences of using substances.
8. **Substance use treatment history:** Assess periods of sobriety and recovery, types and settings of treatment, adherence, and response to treatment. Ask patients what they found helpful in past treatment experiences. Remember to assess simultaneous involvement in 12-Step programs and participation in formal treatment since research suggests the combination is likely the most effective treatment combination available.
9. **Co-occurring psychiatric disorders.** SUDs and other psychiatric disorders commonly co-occur. Co-occurrence worsens the course of both disorders and compromises treatment response compared with either disorder alone (Blanchard, 2000). Determine current or past psychiatric disorders and how these may influence the current treatment plan.

Diagnostic Approaches

Screening determines whether further assessment is needed. Assessment is an ongoing process that begins with the first encounter and the gathering of information needed to formulate treatment planning. Diagnosis determines whether a patient meets specific criteria for having a particular SUD, which in turn may affect the eligibility for treatment. The diagnosis of the SUD alone does not determine how to proceed with treatment. The most common approach to the diagnostic formulation is through a comprehensive clinical interview comparing an individual's current clinical manifestations with specified criteria. Diagnosis of SUDs in clinical settings that specialize in the treatment of mental health and addiction in the United States is conducted using the criteria that make up the categories for substance abuse and dependence, as defined by the ***Diagnostic and Statistical Manual of Mental Disorders*** of the American Psychiatric Association (DSM-IV-TR) (APA, 2000). These 11 criteria are currently separated into ones that indicate "abuse" and "dependence." Abuse criteria include (1) recurrent use that interferes with major role obligations, such as performance in the workplace and responsibilities in the home; (2) recurrent use in hazardous situations, such as operating a vehicle while using substances; (3) recurrent substance-related legal problems (or behaviors that qualify as illegal even if not apprehended); and (4) recurrent interpersonal or social problems as a result of use, such as arguing or fighting while intoxicated. Meeting one of these criteria is considered consistent with a diagnosis of substance abuse.

Substance dependence criteria include (1) physiologic tolerance of the drug so that increased amounts are needed to achieve intoxication or a markedly decreased effect of continued use of the same amount; (2) withdrawal effects such that a withdrawal syndrome is experienced when the patient stops using the drug, or uses the drug to avoid withdrawal; (3) the substance is taken in larger amounts or over a longer period of time than is intended; (4) there is a persistent desire or attempts to cut down or stop use of the drug; (5) a great deal of time is spent in activities associated with drug use, such as obtaining, using, or recovering from the effects of the drug; (6) important social, recreational, or occupational activities are given up as a result of drug use; and (7) the drug use is continued despite the knowledge of having a recurrent physical or psychological problem associated with the use of the substance, such as continued use of cocaine despite its exacerbation of cardiac problems or continued use of alcohol despite recurrent associated blackouts. Meeting three of these criteria satisfies the requirements for substance dependence.

Diagnosis of a Substance Use Disorder

The thinking related to what constitutes a diagnosis is changing with the objective of modifying the categorical system that the current DSM-IV guidelines now represent. Of course, severity is an important variable, and the distinction between physical dependence and nondependence is necessary for treatment planning in addiction clinics where intensity of treatment must be matched to problem severity. However, most practitioners are primarily concerned with how any apparent problems due

to substance use negatively affect their patients. It is more practical to first assess whether substances are being used in ways that cause distress or impairment. Therefore, the last decade has seen less focus on the number of symptoms a person may report, such as what is considered necessary for meeting the threshold for substance dependence. Rather, any behaviors that cause distress or impairment associated with use of a substance may be causing a "disorder." Hodgson and colleagues (2003) discuss "hazardous" and "harmful" drinking. Hazardous drinking refers to a pattern of drinking that may result in future psychological or physical problems, whereas harmful drinking indicates that such problems are already present.

Toward this end experts are recommending that the revised edition of the DSM-IV, the DSM-V, combine the criteria for substance abuse and dependence into a "dimensional disorder" construct, whereby meeting even one criterion will result in a diagnosis of SUD. Recommendations also include removing substance-related legal problems as a criterion and adding substance craving as a criterion for SUD (Hasin, 2011). Therefore, a patient who tells her internist that she wakes up after 5 hours on 3 or 4 nights of every week and then goes on to say that she is drinking two or three alcoholic drinks on these nights doesn't have a disorder under current DSM-IV guidelines because she meets only one criterion for dependence. However, assuming that her doctor suggests she stops drinking to improve her sleep, even if she doesn't drink at any other time but continues drinking on the nights her sleep is disturbed, she is now knowingly contributing to her sleeping problem. Under the proposed DSM-V changes, she would meet criteria for an alcohol use disorder.

Interview Scenarios, Problems, and Resolutions

Case Vignette 1

You are on a rotation in the emergency department (ED). A 23-year-old man came to the ED at 2:00 a.m. with a badly lacerated hand. He is visibly intoxicated and told the triage nurse that he tripped with a beer glass in his hand and the glass broke and cut him as his hand hit a wall. His blood alcohol concentration (BAC) was 0.19. He also told the doctor who provided his wound care that he had never had an accident while drinking before and, in fact, that his drinking had nothing to do with the fall. Rather, it was a loose rug.

You need to screen the patient for substance use to determine whether a referral to an addiction clinic is indicated. You enter the treatment room of the ED that accommodates four beds, noting that one other patient is in a bed next to your patient and that the two have been conversing. The nurse has just indicated to your patient that he can get dressed and that she will be back with his discharge papers. You introduce yourself and your role as a doctor in the ED and ask if you can talk with him for a few minutes. The patient agrees and suggests that you sit down.

Problem:

The patient is in a room occupied by others who will be able to overhear what is said.

Resolution:

The patient is ambulatory. Find an unoccupied conference room and interview him there, indicating that you want his health care information to be confidential.

Problem:

The patient has denied the significance of his alcohol use in contributing to his injury.

Resolution:

Ask for his view of the accident and, if it is the same as when he was admitted, indicate your agreement that his perspective is possible. Do not confront the patient regarding the implausibility of his point of view because doing so will only increase his contention that his perspective is correct as a defensive posture. Remember, you are not going to "treat" alcohol abuse in the ED; rather, the goal is to provide the impetus for him to consider going for an evaluation.

Problem:

The patient had a very high BAC and noted that he has not had accidents previously while drinking.

Resolution:
Ask the patient how much he had to drink tonight (note whether he has a memory for this because blackout is a potential and significant manifestation of alcohol use disorder) and how often he drinks and how many drinks he has on a typical drinking day. Note that he told others he hasn't had accidents before while drinking. Indicate your acceptance of his report but ask if he has had close calls with accidents in the past and in what situations.

Problem:
You have 15 to 20 minutes before the patient is discharged; the patient has been drinking heavily on this night and has hurt himself badly. Despite other aspects of his history, it is likely that he should have a comprehensive evaluation.

Resolution:
Indicate to the patient that it is his decision as to whether he believes that he drinks too much at times. Review the objective evidence related to his recent drinking episode, reflecting on level of BAC (personalized feedback). Indicate your understanding that he may not need specialized treatment but that a conservative approach is for you to recommend that he be evaluated by a substance abuse specialist; in your view the most important goal is for him to be safe and stay out of EDs, and getting an evaluation could help better understand his alcohol use in his life. If he agrees, provide information about how to get an evaluation; if not, give him your card and suggest he call you if he changes his mind.

Case Vignette 2

You are a resident physician treating patients in a community mental health clinic. You receive a referral of a 44-year-old woman who told the intake worker that she just got out of a relationship with a man after living with him for 12 years and that he had been physically and sexually abusive to her. She reports symptoms of depression and PTSD. The intake worker also reports that the patient seemed defensive in answering the questions about substance use—breaking eye contact, fidgeting, and emphatically stating on several occasions that she is not there because she needs treatment for substance abuse. She told the intake worker that she is frustrated because she seems to have to tell the same story over and over again.

You will be evaluating her psychiatric symptoms and whether she could benefit from treatment with medications. The intake worker's report of her behavior related to being interviewed regarding substance use suggests that this must be further assessed.

Problem:
The patient is displaying behaviors suggesting that she is not being truthful and open about her substance use.

Resolution:
Begin your interview by explaining that you have little information and ask the patient in an open-ended fashion to share with you what made her decide to come in. Acknowledge that it is annoying for her to discuss her concerns and explain that everyone she sees in the clinic has different training and experience and that you may hear things that others haven't, which is very important for addressing her concerns and for her treatment planning.

Problem:
The patient continues to discuss psychiatric symptoms and makes no reference to the use of substances.

Resolution:
Reflect her answers while asking for more elaboration. Ask about her relationships, especially her relationship with her last boyfriend, noting whether she talks about his use of substances. If he used substances, ask how that affected her life. Ask about symptoms of depression or other psychiatric disorders she may have had earlier in life. As she discusses these, provide affirmation for her having endured difficult times. Provide objective feedback that many patients use substances in order to "self-medicate" when going through such severe stress. Suggest that substance use during stressful times is considered to be one "normal" reaction. Indicate that you see in her intake record that she has already denied that she uses substances, but ask this again, telling her it is important to be thorough about whether she has been using any substance. Note that your work entails deciding whether she receives medication for her symptoms and that not knowing about her substance use will influence the effectiveness of any prescribed medication and could be harmful to her, depending on what substances she may be using.

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Chapter 7

Pharmacotherapy of Substance Use Disorders

Julie Kmiec, Jack Cornelius, and Antoine Douaihy

Key Points

- Medication-assisted treatment is an important component in the overall treatment of substance use disorders (SUDs).
- Medications are often underutilized in the treatment of SUDs.
- Medication-assisted treatment is a tool a patient can use in recovery, in addition to mutual support groups and individual and group therapy.
- There are U.S. Food and Drug Administration (FDA)-approved medications for the treatment of alcohol dependence, nicotine dependence, and opioid dependence.
- Studies are being conducted to develop new medications that may be used for the treatment of SUDs.
- Behavioral therapies and pharmacotherapy are integrated in an individualized treatment plan.

Medication-assisted treatment is an important consideration for all patients with addiction. Some people with SUDs can stop using substances on their own without any professional intervention or mutual support programs such as Alcoholics Anonymous (AA) or Narcotics Anonymous (NA; Dawson et al., 2005). Only a fraction of individuals with substance use disorders engage in mutual support programs or professional treatment for addiction (Dawson et al., 2006). Addiction is a relapsing and remitting illness, with most patients having multiple relapses during their lifetimes.

Psychosocial and behavioral therapies and abstinence-based treatments are the mainstay of treatment for SUDs. The potential for behavioral interventions to influence involvement and retention in treatment and enhance adherence to medication-assisted treatment is well established (McCaul & Petry, 2003).

The U.S. Food and Drug Administration (FDA) has approved medications for treatment of addiction to opioids, alcohol, and nicotine. Yet, only a small percentage of physicians discuss these medications with their patients, and few patients with addictions are prescribed these medications. Even when an institution, such as the Veterans Health Administration (VHA), has a policy strongly encouraging the use of medication-assisted treatment for addiction, the number of patients treated with medications for addiction is still very low. A recent study of providers in the VHA found that only 3.4% of patients who presented with an alcohol use disorder were prescribed naltrexone, disulfiram, or acamprosate (Harris et al., 2012).

Studies have been done to assess the barriers that interfere with physicians prescribing medications for SUDs. A study done by Mark, Kranzler, Song, and colleagues in 2003 surveyed members of the American Academy of Addiction Psychiatry and American Society of Addiction Medicine regarding their opinions about medications to treat alcoholism. Sixty-five percent of those surveyed responded (n = 1388). They were asked the approximate percentage of alcohol-dependent patients they treated in the past 3 months with naltrexone (13%), disulfiram (9%), antidepressants (46%), and benzodiazepines (11%). Of note, physicians reported that they knew of naltrexone and disulfiram, but their knowledge of these medications was lower than their knowledge of antidepressants.

The reasons that physicians do not prescribe medications for the treatment of SUDs vary and include believing that the medications are not very efficacious, believing that abstinence is the best treatment, believing that their patients do not want to take medications for addictions, patients' concerns about adverse effects, patients' concerns about acceptance by others in mutual support groups, and cost of medications (Mark, Kranzler, & Song, 2003; Swift et al., 1998).

The focus of this chapter is to review medication-assisted treatment for SUDs (Table 7.1). We will also review medications that are being investigated to treat SUDs. We will examine how pharmacological and behavioral approaches can be combined to optimize outcomes and will review the guiding principles of the use of pharmacotherapies in the treatment plan for patients with SUDs. Medications used for the treatment of alcohol and drug withdrawal are reviewed in Chapter 5.

Table 7.1 Medications Approved or Studied for the Treatment of Substance Use Disorders

Substance	FDA-Approved Medications	Medications with Some Evidence of Efficacy but No FDA Approval	Medications under Investigation	Medications Studied but Not Efficacious
Alcohol				
	Acamprosate	Baclofen	Varenicline	SSRIs alone
	Disulfiram	Carbamazepine	Olanzapine	Most antipsychotics
	Naltrexone	Gabapentin		
	Naltrexone XR	Divalproex sodium		
		Ondansetron		
		Topiramate		
Opioids				
	Naltrexone			
	Naltrexone XR			
	Buprenorphine			
	Buprenorphine-naloxone			
	Methadone			
Nicotine				
	Nicotine replacement therapy	Nortriptyline	Nicotine vaccine	

(continued)

Table 7.1 (Continued)

Substance	FDA-Approved Medications	Medications with Some Evidence of Efficacy but No FDA Approval	Medications under Investigation	Medications Studied but Not Efficacious
	Bupropion SR	Clonidine		
	Varenicline			
Cocaine				
		Modafinil	Cocaine vaccine	
		Bupropion SR		
		Desipramine		
		Disulfiram		
		Topiramate		
Cannabis				
		Buspirone		Quetiapine
		Dronabinol		Divalproex sodium
		Entacapone		
		Rimonabant		
Methamphetamine				
		Topiramate		Aripiprazole
		Modafanil		Gabapentin
		Dexamphetamine		SSRIs
				Ondansetron
				Mirtazapine

FDA, U.S. Food and Drug Administration; SSRIs, selective serotonin reuptake inhibitors.

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Medications for the Treatment of Alcohol Dependence

FDA-Approved Medications

Acamprosate

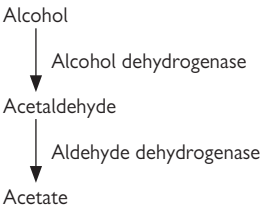
Acamprosate (Campral) was approved for the treatment of alcohol dependence first in France in 1989, and then in the United States in 2004. It is a gamma-aminobutyric acid (GABA) agonist and *N*-methyl-D-aspartate (NMDA) receptor antagonist. After chronic exposure to alcohol, there is thought to be an upregulation of NMDA receptors in an attempt to compensate for the constant presence of alcohol, which works on the brain's inhibitory (GABAergic) neurotransmitter system. It is thought that acamprosate, by being an NMDA receptor antagonist, modulates glutamate hyperactivity (DeWitte et al., 2005). Acamprosate is thought to be helpful with "relief cravings" in which patients drink because of negative mood states and experience withdrawal-like symptoms before alcohol intake (Heinz et al., 2003; Mann et al., 2008).

Studies of acamprosate have generally been more positive in Europe than in the United States. What might account for the difference between the U.S. and European studies is the fact that the European subjects had undergone a longer period of abstinence stabilization before being involved in the study. Acamprosate showed no additional benefit beyond either placebo or psychosocial therapy in the multisite COMBINE trial (Anton et al., 2006). However, a Cochrane review of 24 randomized controlled trials (Rosner et al., 2010), which included 6,915 patients with alcohol dependence, found that acamprosate significantly reduced the risk for return to any drinking to 86% of the risk in the placebo group and significantly increased the cumulative abstinence duration by 11% compared with placebo. The number needed to treat was 9.09 (To put this in perspective, a recent study by Thase and colleagues (2012) found the number of depressed patients needed to treat with escitalopram to see a response was 5.) Acamprosate was associated with a reduction of gamma-glutamyl transferase (GGT) by almost 12 units per liter, which differed from placebo. There was no difference between groups in return to heavy drinking. The FDA mentioned that acamprosate may not be helpful in patients who are actively drinking at the beginning of treatment and in patients who are using other substances. Diarrhea was the only adverse effect more frequently reported in the group receiving acamprosate. In 3- to 12-month follow-up evaluations after discontinuation of treatment, patients in the acamprosate group had a 9% lower risk for returning to any drinking than the placebo group and a 9% higher continuous abstinence duration.

Disulfiram

Disulfiram (Antabuse) was approved for the treatment of alcohol dependence in 1949. It is an alcohol-sensitizing medication that deters a patient from drinking by producing an aversive reaction to alcohol if the patient were to drink.

Alcohol is metabolized as shown below:



Disulfiram is an irreversible inhibitor of aldehyde dehydrogenase. Therefore, if a person taking disulfiram drinks alcohol, he or she will have a buildup of acetaldehyde. The acetaldehyde buildup makes a person feel very sick and is what is known as the "disulfiram-alcohol reaction." Symptoms of this reaction are flushing, sweating, nausea, vomiting, dehydration, and increased heart rate. The reaction may be severe and cause trouble breathing, irregular heartbeat, myocardial infarction, heart failure, seizures, unconsciousness, and death. These symptoms tend to start 10 to 30 minutes after alcohol is ingested. The effect is in proportion to the amount of alcohol ingested and the dose of disulfiram. The reaction may occur for up to 14 days after the last dose of disulfiram (because it may take the body that long to replace aldehyde dehydrogenase).

Disulfiram is not intended to be an "aversion therapy" because ideally the patient would never experience the reaction. The intended use is to help the patient achieve a period of abstinence by being adherent to the medication on a daily basis. Although disulfiram may not reduce the urge to drink alcohol, the expectation of a severe reaction if one drinks alcohol may increase the motivation to not drink. Studies have found that disulfiram is helpful in reducing number of drinking days (i.e., increasing periods of abstinence; see meta-analysis by Jorgensen et al., 2011). People who are motivated not to drink and are committed to total abstinence, have severe alcohol problems, are more socially stable, and attend AA meetings may do well with this medication and are more likely to adhere to it (Swift, 2003). Concerned significant others (CSOs) may be enlisted to observe dosing but should be cautioned against surreptitiously putting disulfiram in a loved one's food or drink. CSOs' role should be to witness and encourage daily dosing. CSO-monitored treatment with disulfiram has been found to significantly enhance abstinence when it is associated with psychosocial treatment (Meyers & Miller, 2001). Another potential use of a drug similar to disulfiram (in Canada; trade name Temposil) is using it as a protective drug "as needed," when the patient feels at risk for drinking.

Patients should be cautioned against using mouthwashes, cough syrups, aftershaves, and other alcohol-containing products while taking disulfiram because they may precipitate a disulfiram-alcohol reaction. Vapors such as paint thinners and varnishes may also have this effect.

Naltrexone

Oral naltrexone (Revia) was approved by the FDA for treatment of alcohol dependence in 1994. It is thought that when someone drinks alcohol,

endogenous opioids are released that bind to opioid receptors, thereby making drinking alcohol pleasurable. Naltrexone is an opioid receptor antagonist that works by blocking endogenous opioids from binding to opioid receptors, so someone who drinks alcohol while taking naltrexone doesn't get the rewarding sensation. Changes in the opioid system also modulate the mesolimbic dopaminergic system, especially the projections of the dopaminergic neurons from the ventral tegmental area to the nucleus accumbens. Both areas are involved in reward and reinforcement. Hence, naltrexone is thought to help with "reward cravings." Naltrexone appears to reduce the frequency and intensity of drinking, that is, preventing a lapse from becoming a relapse (Rosner et al., 2008). Naltrexone's efficacy, like any medication, is limited by adherence to the medication regimen, and patient persistence with this medication has been low in some studies (Harris et al., 2004; Oslin et al., 2008).

In the large multisite COMBINE study, naltrexone was significantly more effective than placebo when given in the context of medical management (Anton et al., 2006), and the benefits were maintained 1 year after the naltrexone was stopped. A Cochrane review done in 2010 concerning naltrexone reviewed 47 randomized controlled studies including 3,881 patients who received naltrexone. Naltrexone significantly reduced the risk for returning to heavy drinking to 83% compared with placebo group. It did not have a significant effect on return to drinking of any amount. The number of persons needed to treat to prevent return to heavy drinking (defined as 5 or more drinks a day) was 9.09. The number of drinking days was decreased by about 4% and heavy drinking days by 3% when compared with placebo. The amount of consumed alcohol per day decreased by 11 grams, and GGT values decreased by about 10 units compared with placebo. Regarding adverse effects, the most common complaints were abdominal pain, nausea, vomiting, decreased appetite, and daytime sedation. Adverse effects from naltrexone led to a 60% higher risk for dropping out compared with placebo, but the risk for dropping out regardless of reason was 8% lower in the naltrexone group. In studies in which subjects were evaluated 3 to 12 months after discontinuation of treatment, patients in the naltrexone group had a 14% lower risk for returning to heavy drinking and a 6% lower risk for returning to drinking any amount (Rosner et al., 2010).

Studies are being done to determine whether there is a particular type of individual who responds best to naltrexone. Based on studies so far, it is thought that someone with a family history of alcoholism or who has cravings for alcohol may be more responsive to naltrexone (King et al., 1997; Monterosso et al., 2001). Studies of patients with the A1118G single nucleotide polymorphism, which codes for the Asn40Asp substitution on the *OPRM1* gene (mu-opioid receptor gene), have been conducted to determine whether there is a genetic variation that predisposes individuals to a more positive response to naltrexone. Individuals with at least one copy of the G allele show greater sensitivity to alcohol than those homozygous for the A allele (Ray & Hutchinson, 2004). When given naltrexone, 50 mg for 3 days, individuals with a copy of the G allele experienced greater blunting of the alcohol-induced high at breath alcohol concentrations of 0.06 (Ray & Hutchinson, 2007).

In 2006, a long-acting injectable formulation was approved for the treatment of alcohol dependence and introduced to the market. The injectable form of naltrexone (Vivitrol) is administered once monthly and has the advantage of improving adherence. In a multisite trial, the individuals who received the active medication had significantly fewer drinking days of heavy drinking at follow-up compared with the individuals who received placebo (Garbutt et al., 2005). It appears that within the context of psychosocial treatment, this medication also helps reduce drinking during high-risk periods such as holidays (Lapham et al., 2009).

Because acamprosate and naltrexone have different mechanisms of action, use of both medications may be helpful for patients who are having trouble controlling their drinking with just one of these medications. The COMBINE study, however, found that acamprosate plus naltrexone was no more effective than naltrexone with medical management or psychosocial treatment (Anton et al., 2006).

In a study of health care costs, utilization outcomes, and continued pharmacotherapy for FDA-approved medications for alcoholism, patients prescribed medications the treatment of alcohol use disorders had lower health care costs than patients not prescribed medications. Despite the increased cost of extended-release naltrexone, patients prescribed this medication had lower health care costs (Baser et al., 2011).

Promising Medications for Treatment of Alcohol Dependence

Topiramate

Topiramate (Topamax) has been FDA approved for treatment of seizures and migraine prophylaxis. It is sometimes used off-label for the treatment of alcohol dependence. Topiramate is thought to work by facilitating inhibitory $GABA_A$ currents at nonbenzodiazepine sites on the $GABA_A$ receptors and antagonizing aminomethylphosphonic acid (AMPA) and kainate glutamate receptors in the corticomesolimbic system. This leads to suppression of alcohol-induced dopamine release in the nucleus accumbens, thereby limiting the reinforcing effects of alcohol.

Three double-blind placebo-controlled studies of topiramate have shown that alcohol-dependent subjects taking topiramate decrease their drinking (Johnson et al., 2003, 2007; Rubio et al., 2009). In a 14-week multisite study by Johnson et al. (2007), alcohol-dependent participants taking topiramate (target dose of 300 mg daily) showed a significantly lower percentage of heavy drinking days from baseline within 4 weeks and at 14 weeks, had a higher rate of continuous abstinence, and achieved 28 days of continuous nonheavy drinking faster than the placebo group. The medication also was found to reduce cravings on various obsessive-compulsive drinking scales that are highly correlated with self-reports of drinking. The dropout rate due to adverse events was higher in the topiramate group (18.6%) than the placebo group. Paresthesia, taste perversion, anorexia, inattention, and pruritus were significantly more common in the topiramate group (Johnson et al., 2007). It has been suggested that because significant effects were reached by week 4 (150 mg daily in the dose titration schedule), perhaps a lower dose of topiramate should be used, which would result in a lower side-effect burden and higher adherence.

Table 7.2 Medications for Treatment of Alcohol Use Disorders

Medication	Typical Dose	Possible Adverse Effects	Metabolism/Excretion; Recommended Monitoring
Acamprosate	333–666 mg PO TID For those with moderate renal impairment (CrCl 30–50 mL/min), use 333 mg PO TID.	Diarrhea, anxiety, headache, depression, insomnia, fatigue, intestinal cramps, flatulence, change in libido, dizziness, pruritus, suicidal ideation	Excreted by the kidneys, so safe to use in people with advanced liver disease Contraindicated with severe renal impairment (CrCl <30 mL/min)
Disulfiram	125–500 mg PO daily	Rash, acne, drowsiness, fatigue, headache, impotence, metallic aftertaste, neuropathy, hepatitis, liver failure, psychosis	Metabolized by the liver Check LFTs before starting this medication and 1 month after starting, then monitor periodically throughout treatment. People with severe heart disease should not take this medication.
Naltrexone	50–100 mg PO daily If patient has been taking opiates, wait 7–10 days after last opiate before giving first dose to avoid precipitating withdrawal.	Nausea, vomiting, diarrhea, constipation, abdominal cramps, headache, dizziness, fatigue, sedation, insomnia, chest pain, arthralgia, muscle cramps, rash, diaphoresis, delayed ejaculation, precipitated withdrawal, acute hepatitis, and liver failure	Metabolized by the liver Check LFTs before starting this medication and 1 month after starting, then monitor periodically throughout treatment.

Naltrexone XR	380 mg IM q 4 weeks	Nausea, vomiting, diarrhea, constipation, abdominal pain, headache, dizziness, anorexia, sedation, insomnia, arthralgia, muscle cramps, rash, sweating, hypertension, precipitated withdrawal, acute hepatitis, liver failure, injection site reaction, CK elevation	Metabolized by the liver Check LFTs before starting this medication and 1 month after starting, then monitor periodically throughout treatment.
Topiramate	75–150 mg PO BID Not FDA approved for alcohol dependence May be started without an initial period of abstinence	Paresthesia, taste perversion, anorexia, inattention, pruritus, somnolence, weight loss, fatigue, anxiety, cognitive dysfunction, UTI, ataxia, abnormal vision, diarrhea, mood disturbances, nystagmus, nausea, dyspepsia, nephrolithiasis, metabolic acidosis, osteoporosis	Excreted by the kidneys, so safe to use in people with advanced liver disease CrCl <10 mL/min: decrease dose 75%

BID, twice daily; CK, creatine kinase; CrCl, creatinine clearance ; FDA, U.S. Food and Drug Administration; IM, intramuscularly; LFTs, liver function tests; PO, orally; TID, three times daily; UTI, urinary tract infection.

Gabapentin

Gabapentin (Neurontin) modulates GABA and glutamate tone and is approved for treatment of partial seizures, post-herpetic neuralgia, and neuropathic pain. There is some evidence that it may be efficacious in reducing alcohol consumption and craving (Furieri et al., 2007). Additionally, it has also been shown to be effective in the treatment of anxiety (Pollack et al., 1998) and insomnia associated with alcohol dependence (Karam-Hage et al., 2000).

A double-blind placebo-controlled study found a significant effect for gabapentin, 1,200 mg daily (divided 300 mg, 300 mg, 600 mg), on several measures of alcohol craving, and it was also significantly associated with several measures of sleep quality (Mason et al., 2009). In another double-blind placebo-controlled study, alcohol-dependent participants received gabapentin, 300 mg twice daily, or placebo. After 28 days, the group receiving gabapentin showed a significant reduction in the number of drinks per day and number of heavy drinking days, and an increase in the percentage of days abstinent (Furieri et al., 2007). When combined with naltrexone, for the first 6 weeks after drinking cessation, study participants taking gabapentin plus naltrexone had a longer interval of time to heavy drinking than those receiving naltrexone alone or placebo. They also had fewer heavy drinking days than the naltrexone-only group. Of note, the naltrexone-only group had more heavy drinking days than the placebo group. After 6 weeks, the gabapentin was discontinued, and the differences between the groups faded (Anton et al., 2011).

Baclofen

Baclofen is a $GABA_B$ receptor agonist and has been approved for treatment of spasticity. $GABA_B$ receptors are located in the ventral tegmental area and control mesolimbic dopamine release from their terminals in the nucleus accumbens. When baclofen is bound to the $GABA_B$ receptors, it is thought to block alcohol and reducing its rewarding effects. A double-blind placebo-controlled randomized study by Addolorato et al. (2002) found that a higher percentage of subjects were abstinent and demonstrated a higher number of cumulative days of abstinence throughout the 30-day study period when taking baclofen, 30 mg daily. Subjects taking baclofen also had lower craving scores for alcohol and decreased alcohol intake. A later, small double-blind, randomized placebo-controlled study done using patients with cirrhosis of the liver (Addolorato et al., 2007) found that subjects prescribed baclofen over a 12-week period were 6.3 times more likely to remain abstinent, and cumulative number of days abstinent was twice as many in the baclofen group (62.8 vs. 30.8). There was no difference between groups in dropout rate. An American group (Garbutt et al., 2010) tried to replicate the Italian findings but did not find baclofen to be effective in reducing percentage of heavy drinking days, percentage of days abstinent, or craving for alcohol. These investigators hypothesized that perhaps the differing results were due to the subjects in the Italian studies having higher levels of physical dependence on alcohol, because their baseline number of drinks was higher, and a different treatment goal (abstinence) than the subjects in the U.S. study. Use of baclofen for treatment of alcohol dependence in the U.S. is still largely experimental.

Ondansetron

Ondansetron (Zofran) is a 5-HT_3 receptor antagonist approved for treatment of nausea and vomiting. Alcohol potentiates selective 5-HT_3 receptor–mediated ion currents. There are densely distributed 5-HT_3 receptors in the mesocorticolimbic pathway that regulate dopamine release. In animal models, use of a 5-HT_3 antagonist attenuates dopamine release and reduces the rewarding effects of alcohol, thereby reducing consumption. Use of ondansetron is reported to be efficacious in treating people with early-onset (<25 years of age) alcoholism. In a study done by Johnson et al. (2000), ondansetron significantly reduced consumption of alcohol and increased abstinence in patients with early-onset, but not late-onset, alcoholism. The most efficacious dose was 4 mcg/kg twice per day, but this was not significantly better than other doses of ondansetron. Use of ondansetron for the treatment of alcohol dependence is still largely experimental.

Other Anticonvulsants

Other anticonvulsants, such as divalproex sodium (Salloum et al., 2005, in treating bipolar patients with alcohol dependence; Brady et al., 2002; Longo et al., 2002;) and carbamazepine (Mueller et al., 1997) have mixed or limited evidence for their use in treating alcohol dependence.

Other Agents

Other studies are being conducted now at the National Institute on Alcohol Abuse and Alcoholism (NIAAA) that are looking at the effectiveness of other agents, such as varenicline and aripiprazole, and agents that act of CRF-1 and NK-1 receptors.

Case Vignette 1

John is a 25-year-old man who started drinking alcohol at age 15 years and reports he started drinking on a daily basis at 17 years of age. He went to inpatient rehabilitation times; the last time was 2 years ago. He attends AA meetings regularly when he is not drinking and has a sponsor and home group. His longest period of abstinence is 8 months. He also smokes 1 pack per day of cigarettes. During the past year, John has had binge drinking episodes when he drank a fifth of liquor daily for several days to a week and then sought detoxification. He has self-referred to the ambulatory detoxification program 18 times in the past 18 months. He denies a family history of alcoholism. John is currently in the partial hospitalization program. After a full psychiatric evaluation, his Axis I diagnoses are alcohol dependence and nicotine dependence. He is interested in a medication to help treat alcohol dependence and is not interested in quitting smoking. He has no Axis II or III conditions. He has no insurance and currently is taking time off of work as an automotive technician to seek treatment.

- What medication would you recommend for John and why?
- Are there any laboratory tests you would check before prescribing this medication and after starting the medication?
- How would you address John's continued desired to smoke?

Suggested Approach to Treatment

Of the FDA-approved medications for alcohol dependence, John is a candidate for all four. He has no known medical conditions that would preclude treatment with a medication that is primarily metabolized by the liver or excreted by the kidneys. Therefore, reviewing all medications approved for treatment of alcohol dependence with John is appropriate. If John endorses "relief cravings," contributing to his drinking, acamprosate may be an appropriate choice. It is generally well-tolerated by patients but does require patients to take a medication three times daily, which may be difficult for some patients to adhere to, which will thereby lower the effectiveness of the medication. If John reports he is committed to total abstinence, disulfiram may be an appropriate choice. One concern in prescribing this medication is patient impulsivity. If John impulsively drinks while taking disulfiram, he could become very ill and need medical attention. Therefore, this aspect needs to be further explored. Lastly, either formulation of naltrexone may benefit John, especially if he endorses "reward cravings" for alcohol. The choice of oral versus intramuscular (IM) formulation will likely be influenced by cost of the medication because the IM formulation costs significantly more per month.

If prescribing acamprosate, check creatinine at baseline and then periodically throughout treatment because acamprosate is renally excreted. If prescribing disulfiram or naltrexone, check liver function tests at baseline and then after 14 days. With disulfiram, also check a baseline complete blood count and serum chemistry panel.

Because John is still precontemplative regarding smoking cessation, motivational enhancement therapy may be used build motivation to change. With John's permission, information on the effects of smoking on his health and drinking behavior may be given.

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Medications for the Treatment of Opioid Dependence

In 1914 the Harrison Narcotic Act was passed. It was a tax on the distribution of opium and coca leaves and their derivatives. The courts interpreted it to mean that it prohibited physicians from prescribing narcotic medications treat addiction.

FDA-Approved Medications

Methadone

Methadone was first used by Vincent Dole and Marie Nyswander in New York in a study to treat heroin addicts (1965). They admitted 22 heroin addicts to their program who were 19 to 37 years old with no other substantial addictions or psychosis and who could not remain abstinent after prior detoxifications. The subjects were admitted to the hospital for the first 6 weeks, during which they had a medical and psychiatric evaluation. Psychosocial problems were reviewed, and job placement studies were done. Those who hadn't graduated from high school were enrolled in GED classes. The patients were stabilized on methadone, and after 1 week, they were allowed to leave the unit on pass. After 6 weeks, the patients were discharged home. They presented daily for methadone dosing, drank the methadone in front of the nurse, and had daily urine drug screens. Reliable patients were given take-home doses for weekends or short trips. Patients were provided with resources for obtaining jobs, housing, and education. Dole and Nyswander found that methadone helped treat "narcotic hunger" and that "ex-addict has become a socially normal, self-supporting person." Of the 22 patients they admitted, only two were discharged from the program. Four of the patients used heroin while taking methadone but reported they did not feel any effect from it. The patients' functioning at school and work could not be discerned from healthy controls. Overall, they concluded that with methadone, addicts could give up heroin and live productive, law-abiding lives.

Once the results from Dole and Nyswander were published in 1965, several methadone clinics sprang up under the auspices of investigational new drug studies. In 1974, the Narcotic Addict Treatment Act was passed, which amended the Controlled Substances Act of 1970 and recognized the use of an opioid drug to treat opioid addiction and defined "maintenance treatment" in federal law. When used for the treatment of addiction, methadone is only to be prescribed by a licensed opioid treatment program. To date, studies have found methadone maintenance programs important in harm reduction in terms of reducing transmission of HIV and hepatitis C virus by decreasing injection drug use (Lott et al., 2006; Metzger et al., 1993; Peles et al., 2011; Turner et al., 2011). Methadone maintenance also helps patients improve their level of functioning, such that they are able to hold a job, their participation in illegal activities is reduced (Anglin et al., 1989; Dolan et al., 2005; Marsch, 1998), and the quality of relationships improves (Maremmani et al., 2007).

Methadone is a full mu-opioid agonist. It has a half-life of about 24 to 36 hours and therefore is usually dosed once daily for the treatment of opioid

dependence. One exception is for the patient who is a rapid metabolizer of methadone. This is determined by getting a methadone peak and trough level. The trough level is drawn before dosing, and then peak level is drawn 2 to 4 hours after dosing. If the peak level is more than two times the trough level, the patient is thought to be a rapid metabolizer and may qualify for split dosing, that is, twice daily dosing, if he or she is eligible for take-home doses.

To be eligible for methadone maintenance, a patient must have at least a 1-year history of dependence on opioids. Three exceptions to these rules are (1) pregnant women, (2) patients released from correctional facilities in the past 6 months, and (3) previously treated patients (up to 2 years after discharge). A person younger than 18 years must have undergone at least two documented attempts at detoxification or psychosocial treatment within 12 months to be eligible for treatment, and a parent or legal guardian must consent in writing for an adolescent to start on methadone maintenance.

Patients are typically started on no higher than 30 mg of methadone on day 1 of treatment. After being assessed by the physician 2 to 4 hours after this initial dose, if the patient is still in withdrawal, the patient may be given an additional 10 mg of methadone for a total maximum first day dose of 40 mg. The total first day dose of methadone allowed by federal regulations is 40 mg, unless the program physician documents that 40 mg was insufficient to suppress opiate withdrawal symptoms in the patient's record.

The two phases of methadone treatment are induction and maintenance. During induction, the risk for death from overdose is highest and is increased with a higher induction dose and sedative use. Forty-two percent of methadone deaths occur within the first week of starting methadone. With daily dosing of methadone, a significant portion of the dose gets stored in the tissue, so even after the second dose, the peak and trough levels will be increased. These increases level off when a steady state is reached in 3 to 7 days. Dose changes should be made as needed every 3 to 7 days to reach a maintenance dose and in 5- to 10-mg increment doses for patients with high tolerance.

Patients' doses are titrated to alleviate opioid withdrawal symptoms, block euphoric effects from self-administered opioids, and eliminate cravings for opioids. The effective maintenance dose range is typically between 80 and 120 mg of methadone daily (Joseph et al., 2000). Patients should be able to function normally on their dose of methadone without impairment of perception or physical or emotional responses. Patients can remain at their maintenance dose for years without adjusting the dose. There is not much utility in checking methadone serum levels, with the exception of checking the peak and trough levels as mentioned above. Of note, studies have shown that serum levels of 150 to 600 ng/mL are necessary to suppress opiate cravings (Leavitt et al., 2000).

Methadone is metabolized in the liver, primarily through the CYP450 3A4 isoenzyme, followed by 2D6 and possibly 1A2, 2C9, and 2C19. Therefore, medications that induce or inhibit these enzymes can affect serum methadone levels (SML). See Table 7.3 for a list of medications that can affect SML.

Table 7.3 Medications that May Interact with Methadone

Common Medications that May Interact with Methadone	
Inducers— can precipitate withdrawal	
Phenytoin	Oxcarbazepine
Carbamazepine	Modafinil
Phenobarbital	Rifampin
Nevirapine	St. John's Wort
Efavirenz	
Inhibitors—can lead to higher methadone levels	
Cimetidine	Amiodarone
Ciprofloxacin	Diltiazem
Fluconazole	Verapamil
Erythromycin	Grapefruit juice
Fluvoxamine	Fluoxetine

There is a phenomenon known as "boosting," in which a patient takes clonazepam or diazepam about 1 hour after receiving his or her methadone dose in order to "get high" from methadone. Because clonazepam and diazepam are substrates of CYP450 3A4, they compete with methadone for the 3A4 enzymes and potentiate the sedative effects of each other.

Table 7.4 lists common adverse effects of methadone. Although some of these adverse effects may go away with time, constipation and diaphoresis tend remain throughout treatment.

Chronic exposure to opioids can lead to low levels of follicle-stimulating hormone and luteinizing hormone, known as opioid-induced androgen deficiency (OPIAD; Smith & Elliot, 2012). This syndrome may subsequently result in low libido, erectile dysfunction, menstrual irregularities, infertility, hot flashes, fatigue, depression, reduced facial and body hair, decreased muscle mass, weight gain, anemia, osteopenia, and osteoporosis. Patients with suspected OPIAD should be referred to their primary care physician or an endocrinologist for further evaluation and treatment.

Consensus recommendations published in 2009 followed the 2006 black box warning on methadone regarding QT prolongation (Krantz et al., 2009). The panel made five recommendations.

1. Patients should be informed of the risk for arrhythmia when they are prescribed methadone.
2. Clinicians should ask patients about a history of structural heart disease, arrhythmia, and syncope.
3. A pretreatment electrocardiogram (ECG) should be obtained to measure the QTc interval. A follow-up ECG should be obtained within 30 days of starting methadone and then annually. Additional

Table 7.4 Common Adverse Effects of Methadone

Common Adverse Effects of Methadone		
Low energy	QT prolongation	Cough
Back pain	Abnormal dreams	Rhinitis
Edema	Anxiety	Yawning
Chills	Decreased libido	Postural hypotension
Hot flashes	Depression	Bradycardia
Malaise	Euphoria	Hyperprolactinemia
Weight gain	Headache	Amenorrhea
Constipation	Insomnia	Diaphoresis
Dry mouth	Somnolence	Rash
Blurred vision	Sexual dysfunction	Urinary retention

ECGs should be done if dose exceeds 100 mg or if there are unexplained seizures or syncope.

4. If QTc is between 450 and 500 msec, discuss potential risks and benefits with patients and monitor more frequently. If QTc is greater than 500 msec, consider discontinuing or reducing methadone dose. Eliminate drugs that promote hypokalemia.
5. Clinicians should be aware of interactions between methadone and other drugs that possess QT interval-prolonging properties or slow the elimination of methadone.

Some medications are contraindicated with methadone because of their propensity to prolong the QT interval as well. They include ziprasidone, quetiapine, pimozide, and phenothiazines. Quetiapine's product information guide was revised in 2011 to specifically state that it should not be used with methadone because of potential QT prolongation and risk for torsades de pointes. Patients should also be made aware that use of cocaine may prolong the QT interval and put them at risk for the fatal arrhythmia.

The risk for overdose is a serious concern with methadone. Patients should be advised of the risks of using prescribed or illicitly obtained benzodiazepines with methadone. Benzodiazepines plus opioids can slow down respiration and lead to death. Alcohol plus opioids can have the same effect and consequence.

Patients initially dose at the clinic on a daily basis in front of a nurse or pharmacist who pours the methadone. Some clinics are closed on Sundays and federal holidays, and patients are granted a take-home bottle automatically for the day the clinic is closed. Apart from this, patients must apply for take-home privileges based on eight criteria for take-home medication specified in federal regulations. Patients must demonstrate the following to receive take-home privileges:

1. Absence of recent drug and alcohol abuse
2. Regular attendance at the methadone clinic

3. Absence of behavioral problems at the clinic
4. Absence of recent criminal activity
5. Stable home environment and social relationships
6. Acceptable length of time in comprehensive maintenance treatment
7. Assurance of safe storage of take-home medication
8. Determination that the rehabilitative benefit of having take-home medication will outweigh the possible risk for diversion

Once patients are granted take-home privileges, an infraction of one of the eight criteria results in a loss of take-home privileges. Each clinic has its own policies for reinstatement of privileges.

The potential for diversion of take-home bottles of methadone is a risk of granting take-home privileges because diverted methadone can lead to overdose and death of persons not enrolled in the methadone clinic. When checking urine drug testing, you must check specifically for methadone and its metabolite to ensure the patient is taking methadone. Because it is a synthetic opioid, it will not trigger a positive screen for opiates.

Despite the groundbreaking MOTHER study (Jones et al., 2010) showing the efficacy of buprenorphine for treating pregnant women who are opioid dependent, methadone is still considered the gold standard for treating opioid-dependent women who are pregnant. Opioids are not teratogenic, but opioid withdrawal can be harmful for the embryo/fetus and result in spontaneous abortion. Women who are opioid dependent and find they are pregnant should be educated about methadone maintenance and referred to the appropriate agency for methadone conversion. Some women will be admitted to the hospital for methadone conversion, whereas this process will be done as an outpatient in some communities. Babies born to mothers taking methadone or buprenorphine (or other opioids) may develop neonatal abstinence syndrome (NAS) and should be monitored for symptoms of NAS using the Finnegan scale (Finnegan, 1990).

Buprenorphine and Buprenorphine-Naloxone

In 2000, the Drug Abuse Treatment Act (DATA 2000) was passed, which allowed physicians to treat patients with opioid dependence with Schedule III through V controlled substances specifically approved by the FDA for medication-assisted treatment of opioid dependence. In 2002, the FDA approved the use of buprenorphine (Subutex) and buprenorphine-naloxone (Suboxone) for the treatment of opioid dependence.

Buprenorphine was first used in France for the treatment of opioid dependence. Like methadone, buprenorphine can be seen as a harm reduction strategy, in that it can help reduce transmission of HIV and hepatitis C by decreasing injection drug use (Lott et al., 2006; Turner et al., 2011). Furthermore, patients adherent to the medication show improvements in their social and occupational functioning and engagement with treatment providers (Parran et al., 2010).

Buprenorphine is a partial opioid agonist that partially binds to the mu-opioid receptor, and it is an antagonist at the kappa receptor. It has a very high affinity for the mu receptor and exhibits slow dissociation from it. Because of its partial agonist activity, buprenorphine has a ceiling effect,

which means that larger doses of the medication do not result in larger effects of the drug. Therefore, it is safer in overdose than a full opioid agonist; however, this ceiling effect can be negated when buprenorphine is used with benzodiazepines or alcohol.

Buprenorphine comes in combination with or without naloxone. When it is mixed with naloxone, it is combined in a 4:1 ratio of buprenorphine to naloxone. Apart from pregnant women and in controlled settings, buprenorphine should almost always be prescribed in the buprenorphine-naloxone formulation to prevent misuse. Naloxone was put in combination with buprenorphine to prevent patients from dissolving the medication and using it intravenously. If taken sublingually as prescribed, the naloxone has such low bioavailability (10% or less) that it has virtually no adverse effects. If a patient uses buprenorphine-naloxone intravenously, the naloxone should put the patient in opioid withdrawal or prevent the patient from getting high from the buprenorphine. A study by Mendelson and colleagues (1997) of opioid-dependent subjects stabilized on methadone and given parenteral formulations of buprenorphine and buprenorphine-naloxone found that intravenous use of buprenorphine-naloxone precipitated subjective and objective opioid withdrawal symptoms and decreased the pleasurable effects of buprenorphine. Harris et al. (2000), however, found that intravenous buprenorphine-naloxone use did not precipitate withdrawal or cause any different effect than sublingual use in opioid-dependent volunteers who were stabilized on buprenorphine and buprenorphine-naloxone sublingually for 10 days prior.

To prescribe buprenorphine and buprenorphine-naloxone, a physician must complete an 8-hour Substance Abuse and Mental Health Services Administration (SAMHSA)-approved course and file a notification of intent to use opioid medications for maintenance and detoxification with SAMHSA, that is, file for a DATA waiver. Then he or she must apply for a special Drug Enforcement Administration (DEA) number, also known as an "X" DEA registration number. For the first year after receiving the DATA waiver, a physician is only permitted to treat 30 patients at one time with buprenorphine. After 1 year, the physician may file a second notification of intent, this time to treat up to 100 patients at a time and, once this is approved by SAMHSA, may begin treating up to 100 patients.

To start patients on buprenorphine-naloxone, patients need to be in visible opioid withdrawal (i.e., not just subjective symptoms) to avoid precipitating withdrawal. Buprenorphine has a higher binding affinity to opioid receptors than other opioids. Therefore, it will preferentially bind to the receptors, displacing other opioids. Because buprenorphine is only a partial agonist, the person who was previously feeling full agonist activity from heroin or oxycodone, for example, is now only feeling partial agonist activity from buprenorphine, and this is experienced as opioid withdrawal. If a patient takes buprenorphine and has a precipitated withdrawal reaction, do not give him or her more buprenorphine because this will just worsen the symptoms. The patient's symptoms of opioid withdrawal can be treated with clonidine, and anxiety can be treated with hydroxyzine pamoate.

On induction, the recommended first dose of buprenorphine-naloxone is 2/0.5 mg to 4/1 mg, and this may be repeated 2 to 4 hours later for a maximum dose of 8/2 mg. The daily dose can be titrated over the first 3 days. The average daily maintenance dose is 16/4 to 20/5 mg. In a positron emission tomography (PET) study by Greenwald and colleagues (2003), 78.9% to 91.5% of the mu-opioid receptors in selected regions of interest were occupied when given 16 mg of buprenorphine versus 84.1% to 98.4% of the mu-opioid receptors after 32 mg of buprenorphine, a difference that was not statistically significant. Because of the ceiling effect, there is no significant benefit expected at doses greater than 32/8 mg.

Typical adverse effects of buprenorphine include diaphoresis and constipation. Other adverse effects may include headache, insomnia, precipitated withdrawal, nausea, vomiting, hypotension, sexual dysfunction, seizures, hepatitis, and hepatotoxicity. Buprenorphine, unlike methadone, is not known to prolong the QT interval.

Buprenorphine is metabolized by the liver, primarily through CYP450 3A4 isoenzymes. Therefore, its levels may be affected by some of the same medications that affect methadone's levels (see Table 7.3). Buprenorphine has a half-life of about 36 hours and can be dosed daily or every other day.

When performing urine drug testing, buprenorphine will not cause the opiate screen to be positive because it is a synthetic opioid. Therefore, like methadone, you need to explicitly order a test for both buprenorphine and its metabolite, norbuprenorphine. It is important to check for the metabolite in the urine because this shows that the patient is actually taking the buprenorphine, and not just putting a piece of buprenorphine in the urine specimen and diverting the rest. To be certain that patients are not taking synthetic opiates, you must also order a screen for oxycodone because the regular screen for opiates usually will not detect it. Check with your local laboratory to see if their opiate test includes oxycodone.

In 2010, the Maternal Opioid Treatment: Human Experimental Research (MOTHER; Jones et al., 2010) study showed that babies born to mothers taking buprenorphine had as good of an outcome as babies born to mothers taking methadone for opioid dependence during pregnancy. In fact, babies born to mothers taking buprenorphine required significantly less morphine to treat neonatal abstinence syndrome (1.1 vs. 10.4 mg), shorter hospital stays (10 vs. 17.5 days), and a shorter course of treatment for neonatal abstinence syndrome (4.1 vs. 9.9 days). However, women taking buprenorphine were more likely to discontinue treatment than women taking methadone. It was hypothesized that buprenorphine may not have adequately treated opioid dependence, thereby resulting in subjects switching from buprenorphine to methadone maintenance.

Methadone Versus Buprenorphine

There are several considerations to be made when referring a patient for either methadone or buprenorphine treatment.

First, one needs to consider the amount of monitoring the patient will need. If the patient is also dependent on several substances, a methadone clinic may be a better option because the patient will be seen by a nurse or pharmacist each day at the dosing window, and if the patient appears impaired, he or she can be assessed and the methadone dose will be held,

if appropriate. Similarly, if a patient has a history of selling drugs, referral to a methadone clinic, where he or she is not given a take-home supply of medication until meeting the eight criteria, is a better option than giving the patient a week's supply of buprenorphine at the first visit.

Second, if a patient has no insurance, a methadone clinic is likely to be more affordable than buprenorphine. Some physicians prescribing buprenorphine do not take insurance and charge $75 or more per office visit. Depending on the physician, the patient may need to return for weekly visits. Suboxone film without insurance costs between $7 and $11 per 8/2-mg film strip.

Third, if a patient has a prolonged QT interval or is on medications that prolong the QT interval, buprenorphine is the safer option.

Fourth, methadone has a broader dosing range. Suboxone doses typically range from 2/0.5 to 24/6 mg daily. Methadone doses vary from as little as 1 mg daily to 200 mg or more daily. With methadone, there is an opportunity to adjust a patient's dose by 1 mg at a time.

Naltrexone

Naltrexone is an opioid antagonist. It has a high affinity for the mu-opioid receptor and displaces bound opioid agonists. It also blocks opioids from binding the mu-opioid receptors, thereby preventing the euphoria from illicit opioid use. Naltrexone tablets were first approved by the FDA for the treatment of opioid dependence in 1984. Naltrexone extended-release injection (Vivitrol) was approved by the FDA for treatment of opioid dependence in 2010.

A Cochrane review of oral naltrexone (Minozzi et al., 2008) found that naltrexone maintenance therapy alone or with psychosocial therapy was more effective in limiting heroin use during treatment than placebo alone or with psychosocial therapy. However, when comparing naltrexone alone to placebo, it was not more effective.

In an 8-week multicenter double-blind, parallel group, placebo-controlled study of sustained-release naltrexone, patients dependent on heroin were detoxified and given oral naltrexone for 3 days. They were then randomized to receive placebo or extended-release naltrexone at 192 mg or 384 mg. They received the same dose of medication 4 weeks later. Subjects attended twice-weekly relapse-prevention sessions. Adverse effects were assessed at each visit, and patients gave observed urine samples for toxicology analysis. Blood samples were collected weekly to test liver function and naltrexone and 6-beta-naltrexol levels. Sixty patients were randomized into the study, including 18 patients in the placebo group, 20 patients in the 192-mg naltrexone group, and 22 patients in the 384-mg naltrexone group. The subjects receiving 384 mg of naltrexone were retained in treatment a significantly greater number of days (48 days) than subjects receiving placebo (27 days) or 192 mg of naltrexone (36 days). When assuming missing urine specimens were positive for opioids, subjects in the 384-mg and 192-mg naltrexone groups had a significantly higher percentage of opioid-free urine specimens (61.9% and 47.1%) than subjects in the placebo group (25.3%). When this assumption wasn't made, there was no difference between the groups in negative

urine specimens because the negative urine specimens ranged from 73.5% to 79.4%, suggesting that retention in treatment was the important factor.

Naltrexone is usually prescribed 50 mg orally daily or 380 mg intramuscularly every 4 weeks for treatment of opioid dependence. Alternatively, one could take the oral preparation three times a week, at doses of 100 mg on Monday and Wednesday and 150 mg on Friday.

Possible adverse effects of naltrexone are listed in Table 7.2. Because naltrexone is metabolized through the liver, baseline liver function tests should be performed, checked after the first month of treatment, and then monitored throughout treatment.

A naltrexone implant is being studied. It has been shown to be more effective than placebo in retaining subjects, decreasing heroin use (Hulse et al., 2010), and improving the clinical condition of subjects (Tiihonen et al., 2012). It has also been shown to decrease amphetamine use (Tiihonen et al., 2012).

Despite what appears to be a very appealing drug that defies the criticism that the patient is "just replacing one drug for another," naltrexone's use has been limited by the following: (1) patients are less willing to take an opioid antagonist and are far more willing to start agonist therapy, (2) patients must be abstinent from opioids or will go into precipitated withdrawal with the first dose, (3) impersistence with treatment is common (O'Connor & Fiellin, 2000). Naltrexone may be a good medication for highly motivated patients such as health care professionals (Ling & Wesson, 1984) or patients being monitored by the criminal justice system (Cornish et al., 1997). It also is a good choice of medication for patients for whom opioid agonist treatment is unsafe because of comorbid alcohol or sedative-hypnotic-anxiolytic (i.e., benzodiazepine) dependence.

In a study by Baser and colleagues (2011) on health care utilization by opioid-dependent individuals, patients prescribed medication for opioid dependence (either buprenorphine-naloxone, buprenorphine, naltrexone tablets or injection, or methadone) had fewer hospital admissions of all types, and their total health care costs were 29% lower compared with opioid-dependent patients who were not treated with medication.

Case Vignette 2

Michael is a 25-year-old man who started using pill opioids recreationally at 20 years of age. His use advanced quickly from weekend to daily use, and at its highest, he was using 60 to 80 mg of extended-release oxycodone (OxyContin) intranasally daily. Michael completed an outpatient detoxification program where he was detoxified from opioids using clonidine for opiate withdrawal symptoms. After completing the detox program, he continued to use oxycodone and decided to start on Suboxone. Michael didn't have insurance and said he would pay cash for the medication; however, his income was limited because he worked in a pizza shop. An addiction psychiatry fellow agreed to see him and started him on Suboxone. On day 1, he was successfully induced on Suboxone, 4/1 mg, and on days 2 and 3, he was prescribed 8/2 mg. He was seen on day 4 and continued on 8/2 mg for another 2 weeks. About 3 weeks into treatment, Michael was approved for the pharmaceutical company's patient assistance program, which paid for his medication. About a week after he got this news, he started complaining about having cravings and urges to use opioids and asked for his dose to be increased. His dose was increased to 12/3 mg daily. The next week when he was seen in clinic, he still complained of cravings and urges to use, citing stress at home, and asked for another dose increase; his dose was increased to 16/4 mg. The following week, he stated he was doing much better. He even mentioned that things were going so well he was already starting his Christmas shopping. Curiously, at this visit the doctor noticed his urine drug screen result from the prior week had not returned. When asked about this, Michael assured her that he went to the lab the week before. The next day, the urine drug screen result returned from the prior day's visit and was positive for cocaine and negative for buprenorphine and norbuprenorphine. The psychiatry fellow called Michael and asked him to come to the clinic for a urine drug screen and bring his prescription in for a film count. Michael agreed. Michael brought in an empty bottle with a story about how he got a "partial fill" of Suboxone, which was not corroborated by the pharmacist. Regarding the abnormal drug screen results, he stated that friends spiked his beer with cocaine and that he absolutely is taking the Suboxone as prescribed. His urine collected during the callback was abnormal. It had a creatinine value of less than 10 and a specific gravity of 1.000, and the lab tech stated she believed that it was a combination of water and soap.

- What are some of the clinical concerns regarding Michael's treatment with Suboxone?
- What does it appear Michael is doing?
- How would you approach Michael's treatment considering his recent behaviors related to his treatment with Suboxone?

Answers to Case Vignette 2

What are some of the clinical concerns regarding Michael's treatment with Suboxone?

There are several clinical concerns. (1) As soon as Michael no longer was paying for the Suboxone, he started complaining of cravings and

urges to use opiates after being stable on a lower dose of Suboxone for several weeks, essentially asking for a dose increase. (2) Shortly after the Suboxone dose was increased, it appears he did not complete a urine drug screen as required. (3) After the Suboxone dose was increased, he had extra money to allow him to go Christmas shopping. (4) Urine toxicology was positive for cocaine and negative for buprenorphine and its metabolite. (5) Michael did not bring in the correct number of Suboxone film strips for the count when requested by the doctor and made up a story that was not corroborated by the pharmacist about receiving a "partial fill." (6) Urine toxicology from the callback was not consistent with urine because the specific gravity was 1.000 and creatinine was less than 10.

What does it appear Michael is doing?
It appears that Michael has been selling his Suboxone and using cocaine and tried to conceal this by skipping a urine drug screen and giving a false urine specimen.

How would you approach Michael's treatment considering his recent behaviors related to his treatment with Suboxone?
There are too many clinical concerns to continue prescribing Suboxone to Michael. Because he hasn't been taking Suboxone, he does not need a taper. If Michael would like to continue with medication-assisted treatment, he may be offered naltrexone or methadone maintenance. Alternatively, he could pursue psychosocial treatment only. The pharmaceutical company should be called to remove him from their patient assistance program.

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Medications to Treat Nicotine Dependence

FDA-Approved Medications

Nicotine Replacement Therapy

Nicotine replacement therapy (NRT) takes the place of cigarettes or smokeless tobacco. When people try to quit smoking, they experience nicotine withdrawal, and symptoms often include irritability, impatience, anxiety, depressed mood, difficulty concentrating, restlessness, decreased heart rate, increased appetite, and weight gain. People often resume smoking because they cannot tolerate nicotine withdrawal symptoms. People start nicotine replacement therapy to take the place of cigarettes or smokeless tobacco, and then the dose of nicotine is gradually reduced so that patients do not suffer as much nicotine withdrawal as they would if they quit "cold turkey," thereby increasing their chances of successfully quitting smoking.

Nicotine replacement therapy comes in five different formulations (gum, lozenge, patch, inhaler, and nasal spray). The first three are available over the counter, whereas the inhaler and nasal spray are available by prescription only.

The gum, lozenge, inhaler, and nasal spray are used as needed for nicotine cravings. The nicotine in the gum, lozenge, and inhaler is absorbed through oral mucosa, whereas the nicotine in the nasal spray is absorbed through the nasal mucosa. The nicotine patch works by continuously releasing nicotine through the skin. Table 7.5 details NRT products, doses, typical duration of treatment, and possible adverse effects.

Smoking cessation can facilitate abstinence from other drugs and alcohol. Effective programs use a combination of NRT and tapering with behavioral interventions. NRT is usually recommended as a short-term therapy and possibly as long-term-therapy for difficult-to-treat smokers. NRT has been shown to be efficacious compared with placebo in multiple studies on measures of abstinence at the end of the trial and at follow-up after 6 and 12 months.

A Cochrane review of nicotine replacement products in 2012 found that use of NRT increases the chances of successfully quitting smoking by 50% to 70%. All forms of NRT have similar efficacy. The effectiveness of NRT was independent of additional counseling. Combining the slow-release patch with a faster-release nicotine product, such as the gum, increased the chances of success. There were five studies comparing the nicotine patch to bupropion, which found no difference in efficacy and that combining the patch with bupropion was more effective than bupropion alone (Stead et al., 2012).

Bupropion SR

Bupropion SR (Zyban) is thought to help people quit smoking by reducing cravings and symptoms of nicotine withdrawal by mimicking nicotine's effects on dopamine and norepinephrine. It also may block nicotine receptors so that nicotine from tobacco cannot attach to them, thereby

Table 7.5 Nicotine Replacement Therapies

NRT Product	Dose	For Smokers Who Smoke	Duration of Therapy	Possible Adverse Effects
Patch	21 mg	>10 cigarettes daily	4–6 weeks	Headache, nausea, insomnia, skin irritation, vivid dreams
	14 mg	6–10 cigarettes daily	2–6 weeks	
	7 mg	5 or fewer cigarettes daily	2 weeks	
Gum	4 mg	≥25 cigarettes daily	12 weeks	Headache, nausea, insomnia, mouth irritation, bad taste
	2 mg	<25 cigarettes daily	12 weeks	
Lozenge	4 mg	First cigarette within 30 minutes of waking	12 weeks	Headache, nausea, insomnia, mouth irritation, bad taste
	2 mg	First cigarette after 30 minutes of waking	12 weeks	
Inhaler	4 mg, of which 2 mg is absorbed, up to 16 times daily	Not specified	Up to 6 months	Headache, nausea, insomnia, mouth and throat irritation, cough
Nasal spray	0.5 mg spray in each nostril, up to 40 doses per day	Not specified	3–6 months	Headache, nausea, insomnia, and nose, eye, and throat irritation

blocking the pleasant effects of smoking. It has been shown to improve quit rates compared with placebo at short-term and long-term follow-up.

Possible adverse effects include headache, dizziness, tremor, insomnia, dry mouth, pruritus, rash, nausea, vomiting, constipation, weight loss, seizures, and suicidal thoughts. Bupropion lowers the seizure threshold and

therefore is contraindicated in patients with a seizure or eating disorder because of increased risk for seizures.

Because bupropion is an antidepressant, it may be a good choice for people who are depressed and want to quit smoking.

The typical starting dose for bupropion SR is 150 mg orally daily for 3 days, then increase to 150 mg orally twice daily thereafter. The second dose should be given around dinnertime to avoid interfering with sleep.

When starting a patient on bupropion, he or she may continue to smoke or use smokeless tobacco for the first week. During the second week, the patient should quit smoking. You may prescribe nicotine replacement therapy with this medication to increase the likelihood of successfully quitting smoking.

A Cochrane review of bupropion SR for smoking cessation reviewed 19 randomized trials and found that bupropion doubled the odds of successful smoking cessation versus placebo (Hughes et al., 2004).

Varenicline

Varenicline (Chantix) is a partial nicotine agonist/antagonist that binds to the alpha-4, beta-2 nicotinic acetylcholine receptor. By partially binding to the nicotinic receptor, it acts as an agonist, stimulating receptor-mediated dopamine release, which reduces cravings and nicotine withdrawal symptoms (Rollema et al., 2007). At the same time, by partially binding to the receptor, it has antagonist activity because it blocks nicotine from tobacco from binding to the nicotinic receptors. Varenicline appears to be efficacious as an aid for smoking cessation for people in recovery (Hays et al., 2011).

Possible adverse effects include headache, bad taste, change in appetite, dyspepsia, nausea, vomiting, constipation, drowsiness, insomnia, unusual dreams, and rash. The FDA issued a black box warning in 2008 to monitor for behavior change, hostility, agitation, depression, suicidality, and worsening of preexisting psychiatric illness.

Almost anyone who is psychiatrically stable may take this medication. Some insurance companies do not cover this medication because there are less expensive alternatives available.

The typical starting dose of varenicline is 0.5 mg orally daily for three days, then 0.5 mg orally twice daily for 4 days, then 1 mg orally twice daily thereafter. Treatment should be continued for at least 12 weeks.

When starting varenicline, patients may continue to smoke for the first week. During the second week, they should quit smoking. Use of nicotine replacement therapy is generally not recommended because it may increase risk for nausea. However, in the first few days and weeks, patients on varenicline who have quit smoking may need short-acting nicotine replacement to help with nicotine withdrawal.

A Cochrane review of varenicline (Cahill et al., 2008) found that varenicline increased the chance of long-term (6 months or more) successful smoking cessation by two-fold and three-fold compared with placebo. More subjects quit with varenicline than bupropion SR at 1 year. An open-label study of varenicline versus nicotine patches showed a modest benefit of varenicline. The most common adverse effect of varenicline was nausea, which subsided over time.

Other Non–FDA-Approved Medications for Smoking Cessation

Nortriptyline

Nortriptyline (Pamelor) is a tricyclic antidepressant. It is a second-line agent used for treatment of nicotine dependence. Its efficacy in treating smoking cessation is thought to be through inhibiting norepinephrine reuptake in central synapses or through nicotinic anticholinergic receptor antagonism. The dose used in clinical trials for smoking cessation was 75 to 100 mg daily for 8 to 12 weeks. Compared with placebo, nortriptyline almost doubled the rate of smoking cessation (Hall et al., 1998; Prochazka et al., 1998).

Clonidine

Clonidine (Catapres) is an alpha-2 adrenergic agonist that reduces central sympathetic activity. It is a second-line agent in treatment of nicotine dependence and is thought to suppress symptoms of nicotine withdrawal, including tension, anxiety, irritability, restlessness, and cravings. A Cochrane review found that clonidine, both oral and transdermal, was more effective than placebo, with up to two times higher rate of abstinence (Gourlay et al., 2004).

Medications Under Investigation for Smoking Cessation

Nicotine vaccines are being developed. NicVAX is one of the vaccines under development that prompts the immune system to produce antibodies that bind to nicotine in the bloodstream. This creates an antibody–antigen complex that is too large to cross the blood–brain barrier, thereby reducing the amount of nicotine getting into the brain. With less nicotine entering the brain, smoking and smokeless tobacco become less rewarding, which makes it easier to quit. NicVAX is currently in phase III development.

For More Information

For more information on the latest research on treating nicotine dependence, see www.treatobacco.net.

Medications to Treat Cocaine Dependence

There are no medications with FDA approval to treat cocaine dependence. Several medications have been studied in the hope that they will be helpful in treating cocaine dependence.

Modafinil

Modafinil (Provigil) is a nonamphetamine stimulant that enhances dopaminergic and glutamatergic transmission and perhaps decreases GABA release. Because modafinil is a stimulant, it is proposed to work in cocaine dependence as an agonist or substitution-type therapy, analogous to how methadone works for opioid dependence. However, studies have not given credence to this analogy. In a double-blind placebo-controlled 12-week study and 4-week follow-up of cocaine-dependent subjects randomized to placebo, 200 mg of modafinil, or 400 mg of modafinil daily, there was no difference between groups in the average weekly percentage of days they didn't use cocaine (Anderson et al., 2009). Similarly, in a 2012 study by Dackis and colleagues, the primary outcome measure, cocaine abstinence based on urine benzoylecgonine levels, was nonsignificant. However, there was a trend found while doing a gender analysis showing that male patients treated with 400 mg of modafinil a day tended to be abstinent more commonly than males treated with placebo ($p = .06$).

Bupropion

Bupropion (Wellbutrin SR) has not been found to be effective in treating cocaine dependence alone (Shoptaw et al., 2008). However, when bupropion was combined with contingency management, cocaine-positive urine toxicology specimens significantly decreased.

Desipramine

Desipramine (Norpramin) was found in a double-blind randomized placebo-controlled study to decrease cocaine use compared with lithium and placebo. Fifty-nine percent of subjects treated with desipramine were abstinent for at least 3 to 4 consecutive weeks compared with 17% of subjects taking placebo and 25% of subjects taking lithium (Gawin et al., 1989).

Disulfiram

Disulfiram (Antabuse) is a functional dopamine agonist because it blocks the conversion of dopamine to norepinephrine, thereby increasing the concentration of dopamine. This may reduce cravings for cocaine or alter the subjective high. In a double-blind study in which participants were randomized to receive either placebo or disulfiram, participants taking disulfiram reduced their use of cocaine significantly more than those taking placebo (Carroll et al., 2004). Patients on methadone maintenance treated with disulfiram versus placebo decreased the frequency and quantity of cocaine use significantly more than those treated with placebo (Petrakis et al., 2000). Likewise, participants on buprenorphine maintenance with cocaine dependence had a higher number of cocaine negative urine drug

screens and an increased number of weeks abstinent than participants receiving placebo (George et al., 2000).

Topiramate

Topiramate (Topamax) blocks voltage-gated sodium channels, enhances GABA transmission at $GABA_A$ receptors, blocks the AMPA/kainate subtype of glutamate receptors. Through this mechanism is thought to reduce the rewarding properties of cocaine and cocaine craving. In a randomized double-blind placebo-controlled trial, 40 cocaine dependent individuals received up to 200 mg of topiramate daily versus placebo for 13 weeks in addition to twice weekly cognitive behavioral therapy. The group receiving topiramate used significantly less cocaine than the placebo group, and 59% of the topiramate group was abstinent for at least 3 consecutive weeks (Kampman et al., 2004).

GABA agonists, such as baclofen and tiagabine (Gabitril), show some evidence of efficacy in decreasing cocaine use.

Cocaine Vaccine

A cocaine vaccine (TA-CD) has been developed and is in phase II trials. The vaccine works by binding a cocaine derivative, succinyl norcocaine, to a nontoxic subunit of the recombinant cholera toxin. Antibodies specific to cocaine are generated in response to TA-CD, and when these antibodies bind to cocaine, the antibody–antigen complex created is too large to permeate the blood–brain barrier where cocaine has its rewarding effects. When the reward from cocaine is diminished, people may find it easier to abstain.

Studies have found that the vaccine is well tolerated, it produces highly specific antibodies after four or five vaccinations over 8 weeks, and antibody levels peak between 10 and 14 weeks. However, antibodies are essentially absent 6 months later, and there is high variability in antibody production (Kosten et al., 2002; Martell et al., 2005, 2009). Hence, patients would need booster vaccinations to maintain the antibody level over time, and not everyone receiving the vaccine will mount the immune response needed to produce a therapeutic antibody level.

In a study of methadone-maintained opioid-dependent patients with concurrent cocaine dependence (Martell et al., 2009), only 38% of patients produced antibody levels greater than 43 mcg/mL in response to TA-CD, which is the level that is thought to be needed to sufficiently capture circulating cocaine and dampen its euphoric effects. It took about 8 weeks to reach this level. When comparing subjects who produced high levels of antibodies to low levels, 53% of the high-antibody group was abstinent from cocaine more than half of the time during weeks 8 to 20 compared with 23% of the subjects who produced low levels of antibody.

A study looking at how the cocaine vaccine affects the subjective effects of cocaine found that the higher the antibody level, the lower the subjective ratings of euphoric effects and cocaine quality in the laboratory. These individuals also had a greater heart rate after cocaine administration in week 13 than they did in week 3, owing to having increased peripheral sympathetic activity secondary to free cocaine in the plasma that is dynamically bound and rebound to antibody (Haney et al., 2010).

Medications to Treat Methamphetamine Dependence

There are no FDA-approved medications for the treatment of methamphetamine dependence, but a variety of medications have been studied. Aripiprazole (Abilify), gabapentin (Neurontin), selective serotonin reuptake inhibitors (SSRIs), ondansetron (Zofran), and mirtazapine (Remeron) have failed to show efficacy in clinical trials. Topiramate (Topamax) does not promote abstinence but does appear to reduce the amount used and reduce relapse rates in those who are already abstinent from methamphetamine (Elkashef et al., 2012).

Bupropion SR

Bupropion SR (Wellbutrin) blocks the dopamine transporter to inhibit dopamine reuptake, thereby increasing dopamine concentration in the synaptic cleft. Methamphetamine promotes dopamine release into the synapse through the dopamine transporter and also blocks dopamine reuptake. Chronic methamphetamine use results in low dopaminergic tone. Therefore, it was hypothesized that bupropion may be helpful in treating methamphetamine dependence because it may restore homeostasis. In a double-blind placebo-controlled study (Elkashef et al., 2008), subjects were started on either bupropion SR, 150 mg twice daily, or placebo. A regression analysis found that over the 12-week study period, there was a modest trend of improvement in urine drug screen results in the bupropion group versus the placebo group ($p = .09$). A secondary analysis showed that subjects with lower baseline methamphetamine use (<18 days of the last 30) taking bupropion had a significantly higher percentage of negative urine drug screens over the 12 weeks compared with placebo.

Modafinil

Modafinil (Provigil) is a nonamphetamine stimulant that enhances dopaminergic and glutamatergic transmission. It was therefore hypothesized that it could alleviate symptoms of methampthamine withdrawal and decrease methamphetamine use and craving. In a randomized double-blind placebo-controlled study, methamphetamine-dependent patients were assigned to either modafinil, 200 mg daily, or placebo for 10 weeks and then followed for an additional 12 weeks. There was no difference in treatment retention, adherence to medication, abstinence from methamphetamine, or craving (Shearer et al., 2009).

More recently, a randomized double-blind placebo-controlled trial of modafinil 200 mg versus 400 mg versus placebo found no group differences in urine drug screen results over a 12-week period. Study results, however, appeared to be limited by adherence to the medication regimen because when secondary analyses were performed, separating groups based on adherence to medication, the group of patients who took the medication had significantly a higher maximal duration of abstinence (Anderson et al., 2012).

Dextroamphetamine

Use of dexamphetamine substitution therapy has been proposed and tested. Results of a double-blind placebo-controlled study done in Australia using sustained-release dexamphetamine (20 to 110 mg daily; medication dispensed daily under pharmacist supervision) found increased retention in treatment and a significantly lower degree of methamphetamine dependence at the conclusion of the study in subjects taking dexamphetamine. Both groups, however, had significant decreases in methamphetamine concentrations based on hair analysis (Longo et al., 2010).

Medications to Treat Cannabis Dependence

A variety of medications have been studied for treatment of cannabis dependence, but there are no FDA-approved medications.

Buspirone

Buspirone (Buspar) is a 5HT-1A receptor agonist and D2 antagonist. In a 12-week open-label study, 10 cannabis-dependent men taking up to 60 mg of buspirone daily had significantly reduced frequency and duration of cannabis cravings and reduced irritability and depression (McRae et al., 2006). A following study in which patients were randomized to buspirone or placebo plus motivational interviewing for 12 weeks found that subjects taking buspirone had a higher percentage of cannabis-negative urine samples (McRae-Clark et al., 2009).

Dronabinol

Dronabinol (Marinol), a synthetic form of THC, was found to be helpful in suppressing cannabis withdrawal symptoms (Haney et al., 2004). This is important because adequate treatment of cannabis withdrawal symptoms may help prevent patients from resuming use of cannabis once they stop. A more recent double-blind placebo-controlled study used drobabinol as an agonist maintenance therapy and found that although there was no difference between the dronabinol and placebo groups in the proportion who achieved 2 weeks of abstinence at the end of the maintenance phase, the dronabinol group had a higher retention rate and fewer withdrawal symptoms than the placebo group (Levin et al., 2011).

Of note, Quetiapine (Seroquel) and divalproex sodium (Depakote) are not effective in treating cannabis withdrawal (Cooper et al., 2012; Haney et al., 2004).

Entacapone

Entacapone (Comtan), a catechol-*O*-methyltransferase (COMT) inhibitor, was found to suppress cravings in 52.7% of cannabis-dependent subjects in an open-label trial (Shafa, 2009).

Rimonabant

Rimonabant, a cannabinoid (CB1) receptor antagonist, is not approved for use in the United States. It was used for weight loss in Europe but was removed from the market because of adverse psychiatric effects. In a randomized double-blind parallel group study, it was found to attenuate the effects of a cannabis cigarette and subjective effects of cannabis after 8 days (Huestis et al., 2007).

Common Guiding Principles of the Use of Pharmacotherapy for Substance Use Disorder

1. Pharmacotherapy is implemented and monitored within the context of a therapeutic alliance in which the patient feels listened to and understood, and believes the doctor is genuinely interested in helping with the addiction.
2. Comprehensive medical evaluation is necessary before making a decision on a pharmacotherapeutic approach.
3. Pharmacotherapy should be a part of the treatment plan, which can include a structured program (e.g., residential rehabilitation, partial hospitalization, intensive outpatient) or individual, group, and/or family therapy.
4. Pharmacotherapeutic intervention should identify and address factors affecting adherence to the medication regimen, such as effectiveness, motivation for change, adverse effects, ease of dosing, availability and cost, cognitive deficits, environmental supports, and attitude and perceptions about one's illness and taking medication.
5. Behavioral interventions should be incorporated with pharmacotherapeutic interventions even though some patients prefer medications as the only intervention for their addiction.
6. Family members and concerned significant others need to be educated about medications for the treatment of addiction so that they can be enlisted to ensure adherence to the medication regimen if needed by the patient.
7. Patients may struggle with the concept of "not really being clean" if they take methadone or buprenorphine. They may receive this feedback at mutual support groups and from concerned significant others.

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Chapter 8

Psychosocial Interventions for Substance Use Disorders

Dennis C. Daley and Lisa Maccarelli

Key Points

- Psychiatric residents and fellows may assume many roles in evaluating and treating patients with substance use disorders (SUDs) and their families.
- Knowledge of the levels of care for treatment and the continuum of services available is necessary to determine treatment needs of patients with SUDs.
- There are many effective psychosocial interventions to help patients engage in treatment and address their SUDs. These include individual, group, family, and combined approaches.
- The goals of most psychosocial treatments are to assist patients with SUDs stop or reduce their use of substances, make personal and lifestyle changes, and engage in long-term recovery.
- Teaching coping skills is a focus of many of these treatments. Skills enable patients to meet the challenges of recovery such as managing thoughts of using, cravings, and negative emotions; building social supports; and identifying and managing high-risk relapse factors.
- Motivational interviewing is an approach to get patients to examine their substance use and/or engage in psychosocial treatment.
- Patients receiving psychosocial treatments may benefit from medication-assisted treatments for addiction to opioids, alcohol, or nicotine. This is especially helpful for patients with more severe addictions with histories of multiple treatment episodes who have had difficulty sustaining their recovery.
- Many mutual support programs are available for patients with SUDs. Those who attend these in addition to professional treatment show improved outcomes. Although 12-step programs (Alcoholics Anonymous, Narcotics Anonymous, and others) are the most common ones used and most readily available, other programs and support services exist, including online resources.
- Both professional treatment and mutual support programs provide patients with SUDs the opportunity to learn strategies to initiate and maintain abstinence and make personal and lifestyle changes.

This chapter provides an overview of evidence-based psychosocial interventions and the continuum of care for substance use disorders (SUDs), the roles of psychiatric residents and fellows in the treatment of SUDs, and a summary of clinical issues that may be the focus of treatment. These interventions are described in treatment manuals and papers summarizing results from clinical trials and can be found under "References and Suggested Readings."

Psychosocial interventions provided by professionals include individual, group, and family approaches, which may be used singly or in combination as part of a total "treatment program." These interventions may also be combined with medication-assistedtreatments for alcohol, nicotine, and/or opioid dependence. Because mutual support programs (both 12-step and other types) are recommended by addiction professionals, we will discuss how to help patients get involved in, and benefit from, these programs. Even if you do not directly provide psychosocial interventions, familiarity with them can help you in working with clinicians and patients in designing, implementing, and monitoring treatment plans for an SUD.

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Roles of the Medical Trainee in Treatment of Substance Use Disorders

You may be asked to perform any number of roles in your work with patients who have SUDs. Although the specific roles you assume will depend on the context of your rotations, knowledge of these can help you integrate into the programs in which you provide clinical services. As a physician, you have a certain status in the eyes of patients that can help you influence them in making decisions about psychosocial treatment. Following is a brief discussion of specific ways in which you can help patients with an SUD or their families.

1. *Provide medication evaluation and management.*You may manage an addicted patient during medical detoxification; provide medication-assisted treatment to patients with more severe forms of alcohol, nicotine, or opioid dependence; or evaluate patients with co-occurring psychiatric disorders who may need medication. Patients addicted to alcohol or opiates with a history of multiple episodes of treatment should be assessed for medications that can aid their recovery. Recommend to clinicians on your treatment team that they talk with patients about medication-assistedtreatments for cases of more severe and/or chronic addiction to alcohol, opioids, or nicotine.
2. *Coordinate care with addiction clinicians.*Provide your input on evaluation of patients, consultation, supervision, and/or direct care as part of a "team" helping a cohort of patients in any type of treatment setting or program. For example, if you think a patient you are seeing for medication-assistedtreatment for alcoholism needs a higher level of care than weekly individual or group counseling, you can initiate a discussion with the program's clinicians to discuss your recommendations and the rationale. Or, if you believe a patient has a coexisting psychiatric disorder that needs to be addressed for recovery from addiction to progress, you can discuss this with clinical staff to determine a plan of action for the patient.
3. *Monitor participation in psychosocial treatment.* Ask if your patient is attending a treatment program. You can discuss how the program is going, what problems the patient is discussing in individual or group sessions, what he is learning about addiction, recovery or relapse prevention, or any other concerns of the patient. If your patient is missing psychosocial treatment sessions or has dropped out, you can discuss the reasons for this and facilitate his improved adherence or reinvolvement in the program. One helpful intervention is to include a member of the treatment program staff while the patient is in your office in a joint discussion so that you can problem-solve the issues contributing to poor compliance or treatment dropout.
4. *Educate, facilitate, or monitor patient involvement in mutual support programs*. Knowledge of these programs enables you to have

productive discussions of how they can help your patient, thus reducing resistance to using these programs as part of a total recovery program. You can give your patient information about types and purposes of mutual support programs and discuss the components of these programs if needed (e.g., meetings, sponsors, the 12steps, recovery literature, service or components of non–12-step programs). Monitoring involvement in mutual support programs may enable you and the patient to catch warning signs of an impending or an actual lapse or relapse to substance use. This may lead to the patient reducing relapse risk or taking action if a lapse or relapse has occurred. You should treat a relapse to addiction no differently than a relapse to a psychiatric disorder. Your goal is to help the patient get back on track, get into the proper level of care, and then learn from the relapse. Avoid judging the patient as "unmotivated" or "not working the program" because of a relapse because this can occur even when patients "work" a recovery program. If a patient is resistant to 12-step programs, discuss other options available in the community, such as Rational Recovery, SMART Recovery, Women for Sobriety, or Secular Organizations (SOS) for recovery. We recommend that you attend a variety of mutual support program meetings so that you better understand these programs, "see" recovery in action, and feel more comfortable promoting recovery and talking with patients about potential benefits of these programs.

5. *Consult with the patient's family or significant other(s).* This may involve eliciting or providing information to them, discussing treatment options for the patient and family, discussing the role of the family in treatment, and/or encouraging families to get involved in mutual support programs such as Al-Anon or Nar-Anon. Families will appreciate the opportunity to provide input about the patient as well as share their experiences. This can be valuable information to use in your sessions with the patient.

Case Vignette 1

Matt is a 39-year-old, employed, married father of children ages 14 and 11 years. He is being treated for cocaine dependence, alcohol abuse, and major depressive illness. During his recent medication visit, the psychiatric resident noted changes in Matt's demeanor and mood, and felt that something significant was happening that Matt was not sharing. He also noted that Matt had missed his last two group therapy sessions. The resident shared his observations with Matt and inquired about what was going on, telling Matt he was worried that he missed his past two group treatment sessions. He also found out Matt had cut down on his NA attendance without discussing this with his therapist. During this discussion, Matt admitted he had been drinking alcohol the past 2 weeks, but initially minimized the potential adverse impact of this on his recovery. However, on further discussion, Matt agreed that drinking alcohol raised his risk for relapse to his cocaine addiction. And, it affected his mood. The resident and Matt agreed that he would call his therapist and report his alcohol use, request a session for himself and his wife, return to group and discuss his relapse with his peers, and return to regular NA attendance the next day. Matt agreed to discuss his reluctance to seek an NA sponsor with his treatment group. Given the recent relapse, the resident scheduled Matt to return in 2 weeks. The resident also told Matt he would consult with his therapist to coordinate the plan to support Matt's re-engagement in counseling sessions.

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Continuum of Care and American Society on Addiction Medicine Framework

The American Society on Addiction Medicine (ASAM) delineates several levels of care for SUDs, from the least to the most intensive (Ries et al.,2009). Some patients will participate in multiple episodes of treatment before they stabilize their SUDs and achieve long-term recovery. Some will use many different levels of care and services. Following is a summary of these levels of care and the goals of each intervention.

Screening, Brief Intervention, and Referral to Treatment

Only 10% to 15% of individuals with SUDs receive treatment. Many who receive treatment do so as a result of screenings and interventions of professionals who encounter these patients in medical, psychiatric, and other settings. Research shows that many patients benefit from all aspects of screening, brief intervention, and referral to treatment (SBIRT), with the more severe cases requiring referral to specialty treatment for addiction. For example, if you work in a psychiatric emergency department, inpatient unit, or ambulatory program, you will encounter patients who can benefit from education, support, and a brief motivational intervention aimed at getting them to examine their alcohol or drug use. As a result, they may reduce their substance use or take other steps to help themselves. You will also encounter patients with addiction who may need detoxification in an addiction program or on a psychiatric unit, where their psychiatric condition can be evaluated, monitored, and stabilized.

Hospital-Based Detoxification or Rehabilitation Programs

These are short-term, medically managed services aimed at helping patients safely withdraw from addictive substances. These services are recommended for more severely addicted patients with significant medical histories or current problems such as seizures or delirium tremens, or a significant psychiatric history of current problems, such as suicidality or severe mood or psychotic symptoms, which require access to physicians and nurses for closer monitoring. Hospital detoxification lasts several days, depending on which drugs the patient is addicted to, and aims to help the patient safely withdraw from substances and develop a plan for follow-up care. Hospital-based rehabilitation programs are usually brief (≥2 weeks), structured, recovery-oriented group programs that aim to help the patient stabilize from acute problems, understand and accept the addiction, and prepare a follow-up plan.

Short-Term Residential Rehabilitation Programs

These are medicallymonitored programs that educate, motivate, and help patients engage in recovery and develop a follow-up plan that usually

includes professional treatment and participation in mutual support programs. Most last 2 to 4 weeks, although some programs last longer. Group treatments are the primary approaches used in residential programs, although patients may also receive individual and family sessions, exposure to mutual support programs onsite or in the community, HIV education, testing and/or counseling, case management, or referral to other medical, social, or vocational services. Medication-assistedtreatments may also be provided in these programs. An important issue is for the patient to successfully transition to the next level of care, which is based on patient need and available community resources.

Long-Term Residential Programs

These include therapeutic community (TC) and halfway house (HWH) programs lasting several months to a year or longer. Both TCs and HWHs focus on helping patients make personal and lifestyle changes. TCs usually are more rigorous in terms of the therapy provided. Following a period of stable adjustment in these programs, the patient may attend academic or vocational training programs to prepare for the job market. The patient may continue in these programs while working in order to receive support while adjusting to his or her potential new employment situation. Individual and group counseling and participation in mutual support programs are offered in these programs.

Partial Hospital or Intensive Outpatient Programs

These are time-limited, structured treatment programs that help patients stabilize from the addiction and learn strategies to remain sober. They may serve to divert patients from inpatient or residential programs, as a "step-down" from residential or inpatient treatment, or as a "step-up" from less intense outpatient care for patients unable to establish and sustain abstinence. Partial hospital (PH) patients may attend 4 days or more per week for several weeks for 4 hours or more per day. Intensive outpatient programs (IOPs) involve fewer treatment days and hours per day than the partial program, but have similar goals. Both PH and IOP aim to get patients involved in an ongoing recovery process through participation in mutual support programs like AA or NA. Group treatment is the primary approach used in these programs, although patients may also receive individual or family sessions, or medication-assistedtreatment for addiction to alcohol, nicotine, or opioids.

Outpatient or Continuing Care

Patients with less severe SUDs, or those who complete higher levels of care such as a residential, PH or IOP, often benefit from individual, group, and/or family sessions, the frequency of which will depend on their current needs. Continuing care is especially important for patients who needed higher levels of treatment, such as medical detoxification, hospital- or residential-based rehabilitation, or IOPs. They may also benefit from medication-assistedtreatment and/or participation in mutual support programs as part of their continuing care program.

Other Services

Some patients with SUDs need case management, HIV testing and counseling, psychiatric assessment, vocational assessment and counseling, social work services, neuropsychological assessments, chaplain services, leisure counseling, and/or participation in community mutual support programs. These services address problems or needs that often interfere with the patient's ability to utilize treatment. However, some of these services, such as vocational training, may not be offered until the patient demonstrates an ability to remain substance free for a period of time (e.g., 6 months or longer). And, not all programs can offer all of these services. The figure below shows all of the components of a comprehensive treatment program.

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Psychosocial Interventions for Substance Use Disorders

There are many effective individual, group, family, and combined interventions for SUDs (Antonet al., 2006; Connors, Donovan,&DiClemente, 2001; Daley &Marlatt, 2006; DiClemente, 2003; Miller, Forcehimes,&Zweben, 2011; NIDA, 2009; SAMHSA, 2004, 2005a). Approaches such as 12-step facilitation therapy (NIAAA, 1995c; Nowinski& Baker, 2003) and coping skills training (Mack, Harrington,& Frances, 2010; NIAAA, 1995b) are used with individuals and groups of patients. Following is a brief review of these psychosocial interventions, some of which are also used with patients who have co-occurring psychiatric disorders. Most of these approaches are described in clinical treatment manuals. Several of these interventions include patient or family recovery materials that can be used with the treatment manuals (e.g., see the matrix model (Rawson et al., 2005; SAMHSA, 2006a,2006b) and integrated treatment of co-occurring disorders models (Daley &Thase, 2004; McMain et al., 2007; Mueser et al., 2003; Najavits, 2002; Roberts, Shaner,&Eckman, 1999; SAMHSA, 2005b; Weiss & Connery, 2011). And, some of these have CD-ROMs that provide training materials, PowerPoint slides, training videos, and/or research articles (NIDA, 2008).

Behavioral Couples Therapy

The behavioral couples therapy (BCT) model provides up to 12 sessions with individual couples or a group of couples, and is often part of a total program that includes other individual and group therapies (O'Farrell, Choquette,&Cutter, 1998; SAMHSA, 2008). BCT addresses alcohol or drug use and focuses on strategies to change the interaction styles within a marriage to support abstinence from substances. The goals of BCT are to decrease negative interactions that may contribute to relapse and increase positive interactions that support an improved marital relationship. This is accomplished through behavioral and problem-solving strategies. First, a functional analysis of the behaviors, within the relationship, that may trigger alcohol or drug use is conducted. Then, the therapist helps the couple develop new interaction styles that are less likely to trigger substance use. This may be accomplished by planning behavioral alternatives to current interaction styles. The couple learns which communication styles are most likely to create stress in the relationship and be a potential trigger for relapse. The therapist then teaches ways to alter these communication styles through behavioral experiments. For example, a spouse will purposely search for positive behaviors in the other spouse and provide positive reinforcement. The couple is encouraged to plan rewarding activities versus constant arguing about substance use. The therapist may explore the nonaddicted spouse's thoughts regarding new behaviors and utilize cognitive restructuring techniques to alter faulty assumptions about the new behaviors.

CognitiveBehavioral Therapy

Cognitive behavioral therapy (CBT) is a short-term, evidence-based approach that has been widely studied in the treatment of SUDs. CBT focuses on

addressing an individual's distortions in thinking as well as associated maladaptive behaviors (Beck, Wright,&Liese, 1994; NIDA, 1998a). Although not an exhaustive list, examples of cognitive distortions include the following:

- *All-or-nothing thinking* leads to views of situations and events as all good orall badwith an inability to find the middle ground. All-or-nothing thinking tendsto result in aninflexibility in one's interpretation of events, frequently leading toa parallel inflexibilityin an individual's corresponding emotions. An example ofall-or-nothing thinking inthe treatment of SUDS would include a patient, diagnosed with alcohol dependence andsober for 9 months, having one drink and telling herself, "What does it matter nowanyway…everything is ruined. I already had one drink, so I may as well keepdrinking." This type of thinking may significantly contribute to a possible slip/lapseprogressing to a full-blown relapse.
- *Jumping to conclusions* includes the distortions of *mind reading* and *fortune telling.Mind reading* is the assumption that an individual knows what another is thinking and reactsaccording to that interpretation. An individual who is discussing a difficult situation in atherapy session and engaging in mind reading may say to himself, "Here we go again…Iknow my therapist thinks I am a big failure, and I cannot do anything right." Based onthis belief/interpretation, the patient does not attend the next two scheduled sessions withthe therapist and will not return phone calls resulting in an interruption in treatment.
- *Fortune telling*involves the prediction of negative outcomes in the absence of any evidence. A patient has been clean and sober for 12 months, is engaged in treatment, and is doing well. She is certain she is going to get fired from her currentjob because of her experiences of being terminated from previous positions. In this current job, all reports and evaluations from her boss have been positive, and feedback has indicated she is a valued employee. Because of the patient's fortune telling distortion as well as her related emotional experiences, including anxiety, fear, and shame, the patient's job performance may be ultimately affected owing to the certainty with which the belief/interpretation of being fired is maintained.
- *Catastrophizing* is characterized by the tendency to believe that an event orcircumstance is or will be the worst-case scenario. If individuals engage in catastrophicthinking, it may appear as if they are "making a mountain out of amolehill." A patientleaves his appointment with his therapist and psychiatrist, reporting that no oneunderstands his situation because if they did, he would be given the medications he isrequesting. The patient continues to report that there is absolutely no way he is going tobe OK without these medications.

The assumption in CBT is that changes in cognitions and/or behaviors will also elicit shifts in emotional experiences. CBT works toward increased awareness of and overall changes in the relationship among an individual's thoughts, feelings, and behaviors. In line with these goals, CBT is helpful in the treatment of SUDs because it directly and indirectly addresses the patient's interpretation of events. Specifically, one's interpretation of an event or situation has an impact on her or his emotional experiences and

potential behavioral responses. Therefore, the more patients are aware of this process, the greater is the likelihood of emotional and behavioral regulation and control. CBT is appropriate for both individual and group treatment and integrates skills training through the utilization of various therapeutic tools, including role playing, examination of evidence, psychoeducation, Socratic questioning, thought records, and functional assessments of behaviors (FABs). FABs may be frequently utilized in CBT as a means to help patients break down situations and identify specific triggers, thoughts, feelings, behaviors, positive and negative consequences, andwhat may be done differently in subsequent situations. FABs may be initially challenging for patients because it can be difficult to separate and identify the various components of a situation, so practicing both with the therapist and as homework is critical. The emphasis on homework is consistent with a CBT approach because CBT treatment consistently incorporates homework in a variety of forms and may include out-of-session practice exercises to increase general coping and relapse prevention skills such as coping with cravings, drug refusal skills, and so forth.

For example, in working to help a patient cope with cravings, time would be spent on increasing awareness regarding the patient's individual experiences of cravings as well as providing education on the occurrence of cravings as "expected" and "normal" components of recovery. Identification of craving triggers would also be included in the sessions along with the discussion and planning of possible ways to avoid certain triggers. In addition, sessions focusing on cravings would explicitly incorporate discussions and practice regarding strategies to cope with the cravings, including distraction skills, talking about cravings, going with the craving/urge surfing, recalling negative consequences of substance use, and the use of self-talk.

Community Reinforcement Approach

The community reinforcement approach (CRA) utilizes individual counseling to help patients learn skills to manage their SUD (e.g., learn to identify and manage high-risk situations, learn to refuse substance use offers), improve family communication and relationships, engage in nonthreatening recreational activities, get vocational counseling if needed, and utilize a social network to support recovery (Meyers & Smith, 1995; NIDA, 1998b). CRA may add vouchers as incentives to reinforce sobriety, which is usually measured by urine samples. The goal is to develop reinforcers that effectively compete with the reinforcing properties of substance use. In the CRA plus vouchers approach, patients earn points toward exchangeable retail items by remaining abstinent from drugs. Along with abstinence, patients are encouraged to make major lifestyle changes to support sobriety. Other techniques include behavioral contracting, goal setting, modeling, and shaping. This counseling is active and focused. If patients have particular issues or problems, they are addressed, but the focus of the CRA session remains primary. A session protocol will first review urinalysis results. A negative result is reinforced, in contrast to a positive result, which removes reinforcement. If a drug screen is positive, then the counselor and patient will analyze the relapse process to determine problem areas. The rest of the session reviews progress with treatment goals, problem solving around the goals, skills training, and establishing new goals

if necessary. The skills training aspect of the program develops behaviors conducive to the maintenance of sobriety (e.g., avoidance or refusal skills, recreational planning, vocational counseling, and social skills training).

Community Reinforcement Approach and Family Training

Community reinforcement approach and family training (CRAFT)was developed from the CRA approach to help families or concerned significant others (CSOs) engage a treatment-refusing member into treatment because families are often adversely affected by a loved one's SUD and may be in a position to influence him to enter care (Smith & Meyers, 2004). Many patients enter treatment as a result of pressure from the court, an employer, or the family. CRAFT is usually provided in 12 weekly sessions of 1 hour each. The main goals are to get the member with the SUD into treatment and to help him stop or reduce his substance use. Another goal is to improve the functioning of the family members or CSOs affected by the loved one's SUD. This is a nonconfrontational approach that aims to help the member with the SUD change by providing positive reinforcement for improvements in substance use behaviors. CRAFT helps family members and CSOs understand internal and external triggers to their loved one's substance use and how to replace substance use behavior with more pleasurable, nonsubstance behaviors. It also helps families and members with the SUD improve how they communicate. For example, CRAFT encourages family members and CSOs to avoid nagging, pleading, threatening, yelling, or lecturing the member with the SUD because these behaviors are not effective. It helps them learn to cope with their own strong negative reactions to the member with the SUD. Results of many studies show that CRAFT has a significant impact on helping families get loved ones into treatment, and both patients and families show improvements.

Contingency Management (Motivational Incentives)

This behavioral approach uses positive incentives to reward patients who attend treatment and maintain abstinence from substances (Kirby & McCarty, 2010; NIDA, 1998a, 2008, 2009). Patients earn low-cost incentives (valued from $1 to $25 in most cases) for submitting negative urines or attending treatment sessions. These incentives may include food or household items, movie passes, other personal goods, or gift cards to grocery or other stores. Many studies show that incentives are highly effective in promoting abstinence from substances and increasing treatment adherence and retention. In our PH program for co-occurring disorders, incentives improved attendance by 60%, which is a significant improvement. Patients who attend treatment have a greater likelihood of improvement than those who drop out early. Hence, incentives can affect treatment adherence as well as substance use in positive ways. This is one of the most effective interventions used with many groups of patients, and its effectiveness is supported by numerous clinical trials.

Continued Care and Recovery Check-Ups

Continued care following completion of an inpatient, residential, or ambulatory rehabilitation program helps patients sustain gains made in the early phase of care and enables them to address current problems and concerns

as well as engage in recovery. Continued care can occur at a treatment facility or by telephone check-ups and provides patients with a connection to professionals in addition to mutual support programs (Dennis, Scott, &Funk, 2003; White, Kurtz & Sanders, 2006). Recent years have seen an increase in the focus on "recovery" for patients with SUDs as a way of managing their addiction and engaging in a process that enables them to make personal changes and use active coping skills because addiction is a chronic condition for many patients (CSAT, 2006; Dennis & Scott, 2007).

Coping Skills Training

There are several versions of coping skills training (CST) from a brief (8 to 12 sessions) to a more comprehensive (26 sessions) version (Mack, Harrington,& Frances, 2010; NIAAA, 1995b). The goal of CST is to help the patient improve interpersonal and intrapersonal skills, to deal with high-risk situations, and to obtain social support for ongoing recovery. Substance abuse is viewed from a social learning perspective in which patients use substances to change the way they feel. Over time, patients begin to expect positive feelings from substance use, and this motivates their substance-seeking behavior. As the addiction progresses, patients have less confidence in their ability to cope without the use of substances (low self-efficacy). Intrapersonal skills include managing thoughts of substance use; decreasing negative thinking; learning problem-solving strategies; increasing pleasant activities; learning to relax and manage stress; becoming aware of anger and managing it so that substances are not used; learning to interrupt seeminglyirrelevantdecisions, developing a plan for emergencies; and coping with persistent problems. Interpersonal skills include improving communication; using "feeling" talk; assertiveness; refusing substances; developing intimate relationships; and enhancing social support networks. Individual and group sessions may focus on specific topics whereby the patient learns information, shares thoughts and feelings, and practices coping skills.

Strategies used in CST include roleplaying and homework assignments. Roleplaying facilitates the use of coping skills in real-life situations (e.g., saying no to an offer of alcohol or drugs, asking a friend for help and support, asking an NA or AA member to be a sponsor, sharing feelings with others in healthy ways). Homework is used to encourage the practice of skills in real life outside the therapy office. Skills are also taught through therapist modeling, verbal presentation, treatment contracts, and self-monitoring forms. The therapist is active and directive in carrying out the treatment protocol and encouraging collaboration with the patient.

Dialectical Behavioral Therapy

Dialectical behavioral therapy (DBT) was originally developed by Marsha Linehan and her team at the University of Washington for the treatment of borderline personality disorder (BPD), specifically for those individuals experiencing chronic suicidality (Linehan, 1993). Although DBT has roots in CBT, Dr. Linehan has integrated Eastern and Western psychology/philosophy, particularly Zen philosophy and practices. With this integration, DBT moves away from solely a "technology of change" focus associated with traditional cognitivebehavioral approaches to a dual focus on

a "technology of acceptance" as well asa "technology of change." This is done in DBT with an ever-present balance of acceptance and change through the use of validation and problem-solving strategies.

Since its origin, DBT has been adapted for numerous patient populations, including those individuals diagnosed with co-occurring BPD and SUD(McMain et al., 2007). In this adaptation, the core modes of DBT treatment remain the same, including individual therapy, group skills training, telephone consultation, and consultation team. As with the original model, the application of DBT to the co-occurrence of BPD and SUDs maintains a hierarchical approach to behavioral targets: a decrease in suicidal and life-threatening behaviors; decrease in therapy-interfering behaviors; decrease in quality-of-life interfering behaviors; and increase in behavioral skills. Overall, this treatment approach seeks to decrease serious behavioral dyscontrol and increase more adaptive and skillful behaviors. Addictive behaviors are viewed as learned behaviors functioning to regulate emotions.

A key component to this model of DBT is the dialectical approach to abstinence, a balance of harm reduction principles (acceptance) and absolute abstinence (change). Dialectical abstinence "is a synthesis of unrelenting insistence on total abstinence before any illicit drug abuse and radical acceptance, nonjudgmental problem solving, and effective relapse prevention after any drug use" (Linehan, 1993, p. 151). In addition, DBT for co-occurring BPD and SUDs identifies the treatment engagement difficulties that are frequently present for those individuals with SUDs. DBT refers to those patients who come in and out of treatment as "butterflies" and provides strategies for attachment to increase engagement, including explicit discussion with the patient regarding the concept of the butterfly attachment difficulties. Other strategies include increasing contact, providing in vivo treatment, building connections to the social network, flexibility in session length, actively pursuing patients, mobilizing the team when the therapist feels demoralized, and building the patient's connection to the treatment network.

Because co-occurring BPD and SUDs can present numerous clinical challenges, DBT's focus on tending to both the patient and clinician is critical. This model provides an integrated treatment approach for patients as well as offering support and frameworks for conceptualization to the clinician.

Family Approaches

Multisystemictherapy (MST), multidimensional family therapy for adolescents (MDFT), and brief strategic family therapy (BSFT) aim to help families engage the member with an SUD in treatment and to provide treatment for the family (SAMHSA, 2004). The goals are to stop or reduce substance use and to make positive changes (the member with the SUD and the family). These therapies deal with substance use issues as well as family interactions to improve how members communicate and relate to each other. Family treatment may help stabilize and reorganize the family through restructuring family roles and rules while developing appropriate family boundaries. Therapy is often difficult because families are entrenched in their unhealthy interaction patterns and any change is threatening to the family homeostasis. The therapist must tolerate the family's expressed emotion, ambivalence, and what often seems like tremendous effort to help the family change unhealthy patterns of

interaction. Therapists can use a variety of strategies to change these patterns but must progress at a pace tolerable to the family. Studies show that these approaches help engage the SUD member in treatment, reduce substance use and other problematic behaviors, improve academic and social functioning, and improve how the family relates.

Group Approaches

Group treatment is the modality most frequently used in the treatment of SUDs. There are numerous models of group treatment, including group drug counseling (Daley & Douaihy, 2011a; NIDA, 2002), the matrix model (Rawson et al., 2005), 12-step facilitation (Nowinski& Baker, 2003), coping skills training (Monti et al., 2002), relapse prevention (Daley &Douaihy, 2011b), motivational CBT (Sobell&Sobell, 2011), and the stages-of-change approach based on the transtheoretical model of behavior change (Velaquez et al., 2001). Some of these models are brief (e.g., the motivational CBT model involves eight sessions), whereas others are extensive (e.g., the matrix model conducted over 6 months or longer provides 70 or more group sessions on early recovery skills, relapse prevention, family education, and social support).

Types of groups offered include any combination of the following: (1) structured groups that focus on a topic or issue pertinent to addiction or recovery (these sessions have specific goals and information to becovered in an interactive manner); (2) therapy or problem-solving groups in which the particular cohort of patients determines the focus of the sessions, which usually relates to current problems, concerns, and issues of group members; and (3) other groups (goal setting, family education, art or music therapy groups, or groups in which specific cognitive and/or behavioral skills are taught and practiced, or relapse prevention groups).

Goals depend on the specific type and function of the group. In general, groups aim to help patients(1) learn information about addiction, treatment, and recovery; (2) increase self-awareness of personal problems and issues; (3) receive support from peers and give support to them; and (4) learn coping skills to deal with challenges of recovery (e.g., managing cravings, social pressures to use, upsetting emotions). Groups such as therapy or problem-solving groups may also provide an excellent forum for peer feedback from others recovering from SUDs. Peer feedback about behavior is often more powerful than feedback from professionals.

In relation to groups, you can help patients in several ways. First, you can encourage and help link patients to group programs or specific treatment groups based on their clinical needs. Second, you can ask patients to describe their experiences in groups (e.g., What are you discussing in groups? What are you learning? What do you find helpful? What issues/problems should you be discussing with your peers?). Third, you can collaborate with group clinicians to discuss the progress (or lack of) with specific patients. Finally, for patients who drop out of groups or show poor adherence, you can discuss the reasons and attempt to get them re-engaged in groups.

Individual Drug Counseling

Individual drug counseling (IDC) was originally developed as a 9-month counseling program (twice weekly for 3 months; weekly for 3 months;

monthly for 3 months) for cocaine addiction, but has been adapted to other types of SUDs for briefer periods of time (NIDA, 1999). This approach reflects the 12-step philosophy in which addiction is viewed as a biopsychosocial disease that affects many areas of functioning (physical, psychological, social, spiritual). These areas are addressed in treatment. IDC is different from psychotherapy because it focuses on behavioral goals that target substance use. IDC focuses primarily on present issues and behavior and does not delve much into issues of the past. Each session inquires as to the last time the patient used substances, current substance use, or any urgent problems the patient has; gives feedback about drug urinalysis tests; and discusses other relevant recovery issues.

The primary goal is achieving and maintaining abstinence from all substances. In IDC sessions, patients learn coping strategies and "tools" for ongoing sobriety. They are encouraged to engage in mutual support groups and follow a 12-step program, so they continue to learn ways to manage their addiction while receiving support from peers in recovery.

In the early initiation stage of IDC, therapists deal with patient denial and ambivalence about recovery. The goal is to help them realize they have a disease and need to break the addictive cycle. In the early recoverystage, patients learn about drug use triggers and gain skills to successfully deal with these. In the maintenance stage, the patient continues to learn about the relapse process, which includes identifying and coping with triggers, cravings, and urges. The patient continually practices learned skills and makes ongoing changes to support sobriety. Finally, advanced recovery is a continued commitment to change and growth. Formal treatment may end at this stage, but the patient continues to engage in activities such as NA, AA, or other mutual support programs that support sobriety and help facilitate change.

Integrated Treatment for Co-occurring Disorders

Integrated treatment for co-occurring disorders (CODs) addresses both the SUD and comorbid psychiatric disorders (Daley & Moss, 2002; Daley &Thase, 2004; Mueser et al., 2003; Weiss & Connery, 2011). Addiction treatment programs vary in their ability to manage patients with CODs. Some programs provide limited COD services to patients with mild to moderate severity of psychiatric illness. These are patients who are fairly stable in terms of their psychiatric condition (e.g., an alcoholic with moderate depression or anxiety). Other programs, usually embedded in a mental health system, help patients with more severe types of CODs. This includes patients with psychotic, bipolar, recurrent major depression, or other persistent and chronic types of psychiatric illness. Many models of COD exist, including those that are general in focus (these focus on both the psychiatric and SUD issues regardless of diagnoses) and those specific to a particular type of psychiatric illness, such as post-traumatic stress disorder (PTSD), schizophrenia, or bipolar illness. Many studies show that integrated treatment of COD is effective, but becausemany patients have multiple chronic disorders, they are prone to relapses to the SUD or the psychiatric illness. Patients in a COD program may receive any combination of individual, group, family, or milieu therapies; ancillary services (case management, vocational counseling); and medication evaluation and treatment.

Case Vignette

Allison is a 37-year-old single unemployed white woman who has a 15-year-old daughter from a previous relationship. Allison has had long-standing difficulties with alcohol, cocaine, and benzodiazepine use as well as a history of depressive and anxiety symptoms, loss and trauma, and self-injurious behaviors. In addition to diagnoses related to her substance use, Allison has been diagnosed with multiple mood and anxiety disorders, including PTSD, as well as BPD. Allison has been involved in outpatient, inpatient, and residential treatment beginning as a teenager. Her most recent hospitalization occurred following an overdose. When discussing the overdose, Allison reported she had been feeling stressed and overwhelmed due to constant family conflict, responsibility for her daughter, and pressure to get a job. She also indicated difficulties regarding the lack of a support system due to family members' struggles with active substance use and mental health concerns.

- What is key to conceptualizing Allison's case that will guide your treatment approach?
- What type of overarching treatment approach would be best for Allison?
- What could this approach help Allison achieve?

Answers to Case Vignette

What is key to conceptualizing Allison's case that will guide your treatment approach?

If Allison were your patient, you would want to consider her significant struggles with co-occurring disorders.

What type of overarching treatment approach would be best for Allison?

Based on this conceptualization, an integrated approach to treatment is critical. This type of approach mirrors patients' experiences of their disorders by treating the whole person—not just the addiction piece *or* the mental health component—and gives patients permission to discuss *all* symptoms and difficulties.

What could this approach help Allison achieve?

An integrated treatment approach also allows Allison to increase her awareness regarding the relationships among her SUD and other symptoms/diagnoses, thus leading to more effective coping, including direct implications for relapse prevention. Specifically, as patients increase their own understanding regarding the connections among their symptoms, the likelihood of successful recovery is enhanced, therefore decreasing the risks for and/or severity of relapse.

Matrix Model (Stimulant Abuse or Addiction)

This intensive outpatient model was developed for individuals who abuse or are dependent on stimulants (Rawson et al., 2005; SAMHSA, 2006a,2006b). It involves 16 weeks of structured group programming followed by up to 36 weeks of continuing care. The matrixmodel incorporates elements of cognitive behavioral therapy, psychoeducation, relapse

prevention, 12-step approaches, and family support. The program involves 3 individual or family sessions, 8 early recovery skills group sessions, 32 relapse prevention group sessions, 12 family education group sessions, and 38 social support group sessions. Each session has a curriculum that structures the session topic. The individual and family sessions orient patients and families to treatment, focus on current crises, review progress, and discuss any issues of concern to the patient or family. The early recovery skills group helps patients to learn about recovery skills and mutual support programs like AA, NA, Cocaine Anonymous (CA), or Crystal Meth Anonymous (CMA). Issues addressed in these early recovery skills groups include addiction, triggers, and cravings; format and benefits of 12-step programs; physical challenges of recovery; ways to maintain abstinence; how to control thoughts and emotions; and how to use 12-step program sayings.

The relapse prevention groups introduce patients to the pitfalls of recovery and factors contributing to relapse. They provide a context for long-term involvement with peers in learning and practicing recovery skills. Issues addressed in relapse prevention groups include other substances, emotions (anger, boredom, depression, guilt, and shame), work and recovery, motivation, staying busy, warning signs of relapse, trust, life and money management, emotional triggers, stress, relationships, mutual support programs, and other compulsive behaviors.

The social support groups provide patients with opportunities to continue to learn and practice skills and explore problems in recovery with peers. Although the needs of the specific group dictate the topic of the group sessions, topics discussed may include any of the following: anger, codependence, commitment, compulsions, control, cravings, depression, emotions, fear, friendship, fun, grief, guilt, happiness, honesty, intimacy, isolation, patience, physical recovery issues, relationship issues (isolation, intimacy, rejection, masks to hide feelings, sex, trust), relaxation, rules, scheduling time, selfishness, spirituality, thought stopping, and work issues.

The family education groups help families understand SUDs, the impact on the member with the problem and the family, treatment, and recovery. These sessions also provide a context for family members to discuss their experiences, questions, and concerns about their loved ones with the SUD. Although these are not family therapy sessions, these groups encourage families to learn how to cope with the members with the SUD, and change some of their behaviors (e.g., reduce or stop enabling behaviors). Families learn about recovery and are encouraged to take care of themselves and not focus most of their time, attention, and energy on the member with the SUD. They also learn about mutual support programs for families and how these can help them (e.g., AA, Alateen, NA, Codependents Anonymous, and others). Some of the topics reviewed in groups include triggers and cravings, substances (alcohol and other drugs), recovery, relapse, rebuilding trust, family issues in recovery, and communication issues.

Motivational Enhancement Therapy

Motivational enhancement therapy (MET) is a brief, individual therapy (4 to 6 sessions) that aims to resolve ambivalence about engaging in treatment or stopping substance use (NIAAA, 1995a; SAMHSA, 1999). MET is

patientcentered and is not confrontive. It incorporates principles of motivational interviewing to strengthen motivation and build a plan for change. This is accomplished by asking questions that get the patient to look at the discrepancies in his or her current behavior in comparison to personal goals. Therapists enhance discrepancy by providing nonjudgmental and objective feedback about the patient's behavior. The two main issues that patients are asked to consider are(1) how much is their drinking or drug use behavior affecting them and causing problems, and (2) what are the costs and benefits of changing their substance use. If the patient becomes motivated to change, the therapist can offer advice and possible alternatives to facilitate change. The therapist always emphasizes that change is the patient's personal decision.

There are three primary phases of MET treatment. In the first phase, the therapist attempts to build motivation within the patient to change. This is accomplished by understanding the patient's perceptions and feelings. The therapist then elicits self-motivating statements by creating ambivalence through feedback, questioning, and reframing situations. The therapist is always looking for discrepancies between the patient's behavior and his goals. Resistance is dealt with nondefensively and is considered a natural part of the change process. In the second phase, the therapist attempts to strengthen the patient's commitment to change. This is accomplished by weighing consequences of change versus no change, offering information and advice, dealing with resistance, and communicating the patient's free choice in the change process. In the final phase, the patient and therapist review progress and renew the commitment to change. Further interventions to increase motivation are utilized as necessary.

Motivational Interviewing

Motivational interviewing (MI) is a patient-centered, directive method to enhance intrinsic motivation to change by helping the patient explore and resolve ambivalence to change (Miller &Rollnick, 2002; Rollnick, Miller,& Butler, 2008). This involves collaborating with the patient in exploring substance use and related problems rather than confronting the patient. It engages the patient in active discussions of these problems while conveying that change is the responsibility of the patient. MI is used with many types of SUDs, psychiatric disorders, and medical problems. It may be used to help engage patients in treatment or as part of a total treatment program.

There are four principles of MI. The first is to express empathy to convey that you understand the patient's subjective experience and to do so in a warm, nonjudgmental manner. The second is to develop discrepancy between the patient's substance use and important goals or values. The third is to roll with resistance and avoid arguing with the patient to change, confronting resistance or defending your position regarding behavior change. The fourth principle is supporting self-efficacy, which is your belief that the patient can make positive changes.

Methods used in MI sessions include open-ended questions, affirmations, reflections, and summarizing your discussions. Open-ended questions encourage patients to talk and elaborate on their beliefs and experiences, and invite them to share their perspectives. This also helps patients with self-exploration. Affirmations are compliments and statements of

appreciation or understanding. Reflections involve making statements and not asking questions, and are a way to check what a patient may mean by what is shared in the session. Summarizing is a way to provide a brief review of the discussion from the patient's perspective and emphasize any change that the client has identified as well as the necessary steps to make this change.

Relapse Prevention Therapy

Relapse prevention therapy (RPT) helps the patient prepare for the possibility of relapse and reduces relapse risk by identifying and managing high-risk relapse factors and early warning signs of relapse, making broader changes to achieve a more balanced lifestyle so that substances are not desired, and intervening early should a lapse or relapse actually occur (Bowen, Chawla,&Marlatt, 2011; Daley & Douaihy, 2011b; Mack, Harrington,& Frances, 2010; Marlatt& Donovan, 2005; NIDA, 1994; Witkiewitz&Marlatt, 2007).

There are several categories of high-risk relapse factors, including negative emotional states, social pressures, interpersonal conflicts, and strong cravings to use substances. Negative emotional states such as anxiety, anger, boredom, emptiness, depression, guilt, shame, and loneliness are the most common factors contributing to relapse. However, it is not the emotion that determines if a relapse occurs, but whether or not the patient uses active coping skills to manage the emotional state. Interpersonal situations such as direct or indirect social pressures to use substances or conflicts with another person are the second and third most common precipitants of relapse. You can help the patient reduce relapse risk by examining which emotions or interpersonal situations are perceived to be high risk for relapse. Then, specific strategies can be discussed on how to manage these high-risk situations. Strategies should be based on the unique features of the high-risk situation for the patient. For example, anger problems with one patient may require helping this individual learn to accept and express anger appropriately. Anger problems with another patient may require helping this individual to control anger and rage, and not express it in interpersonal encounters. Boredom for one patient may be a function of lacking hobbies or activities, whereas for another patient, boredom may represent a serious problem in a job in which this person feels underused or not challenged.

Obvious and subtle warning signs often show before a relapse. These signs show in changes in attitudes, thoughts, feelings, and behaviors. For example, a patient may miss sessions scheduled with you or cut down or stop taking medications to aid recovery from addiction without first discussing this with you or a therapist. You can help patients who have had previous relapse experiences complete a microanalysis of these experiences to become aware of the warning signs that were ignored. Hence, you help them learn from past mistakes. You can also help the patient by pointing out any warning signs you notice or discussing indicators preceding relapses in the past so that the patient can learn from these experiences.

Patients can also benefit from broader strategies that reduce stress, improve their coping ability, or improve health. These include exercise, meditation, focusing on spirituality, or focusing on achieving a better

balance between "obligations" in life (shoulds) and "desires" (wants).The belief is that as patients improve the quality of their lives, they have less reason to want to resort to substance use to cope with stress, feelings, or life problems.

Patients also need to prepare to intervene early to prevent a lapse from becoming a relapse or stopping a relapse before it gets out of hand. The patient's initial emotional and cognitive response to a lapse determines whether there is a return to recovery or movement further down the road to a full-blown relapse. Patients may feel angry, depressed, guilty, or shameful following a lapse or relapse. They may think, *I'm a failure, I'm incapable of changing, I just can't do it, or why even bother trying,*which can fuel the relapse further. Teaching patients to challenge such thoughts and rehearsing a plan to interrupt a lapse or relapse ahead of time can prepare patients to take action rather than passively accept that there is nothing they can do.

Therapeutic Community

A TC is a group of people who share a common problem such as addiction and live together in a facility run by professionals, many of whom are recovering from addiction (DeLeon, 2000). Individuals in TCs usually have a history of multiple drug use, multiple episodes of treatment, poor coping skills, antisocial behaviors, and few healthy support systems.

Although each program has its own individual philosophy, all communities follow social-psychological and self-help theories. In the TC approach, the primary goalsare to abstain from substances, develop life skills, and change antisocial attitudes and values.

The TC approach views addiction as a disorder of the whole person, involving multiple physical, psychological, and spiritual areas of functioning. The problem of addiction is within the person; therefore, treatment focuses on psychological and social changes. Recovery is viewed as a process whereby the person makes changes in lifestyle and personal identity. This is accomplished by following TC values and beliefs that are viewed as essential to personal growth and healthy living.

The main concepts of TC reflect a focus on group membership and participation. Individuals define themselves and their particular roles in reference to the community. Particular members who reflect positive progress serve as role models within the community. Members are expected to adhere to the community norms and values while using these guidelines as a basis for evaluating individual growth and change. The community facilitates individual growth through open communication in the context of group relationships. Members are given feedback from other members about their progress. The community is the agent through which change occurs.

The ways in which a TC creates change are by using a variety of activities to facilitate movement through the stages of change. The stages of change vary depending on individual programming, but generally reflect an initial orientation, a primary treatment component, and a re-entry phase into society. One way change is accomplished is through individual engagement in the group milieu. Patients attend meetings and activities aimed at

enhancing group cohesion and reinforcing the group structure and goals. Another method is through group behavior management. This occurs through the use of privileges and disciplinary procedures. Members are rewarded for prosocial behavior and lose privileges for negative or antisocial behavior. The goal is for the individual to internalize the concepts taught while involved in the TC. This is important because the person has then incorporated the values as their own and is more likely to use them after treatment ends.

Twelve-Step Facilitation Therapy

Twelve-step facilitation (TSF) is based on the 12-step philosophy of AA and NA (NIAAA, 1995c; Nowinski& Baker, 2003). The primary objective is to facilitate patient participation in 12-step programs. This is accomplished by helping the patient accept addiction as a progressive illness. By accepting that they have an illness, patients break through their denial and open themselves to the 12e-step program. Patients must admit that that they have lost control over their substance use and their life. They must accept that there is no cure and that only lifelong abstinence and recovery will arrest the disease process.

Each session has an agenda based on topics related to 12-step philosophy. The patient is encouraged to attend 12-step meetings, maintain a journal of his reactions to meetings, and read 12-step recovery literature. TSF involves 12 sessions, with extra emergency sessions if needed. An introductory session includes an alcohol use history, previous treatment experiences, and a determination of a diagnosis. Topics that are covered in the first session include negative consequences, tolerance levels, and examples of when the patient lost control of use. Sessions 2 to 11 cover various topics of 12-step recovery. Each session reviews the patient's journal, discusses cravings or episodes of substance use, and then reviews the topic for the session. The session is then summarized, and a recovery assignment is given.

TSF individual or group sessions are active and focused. Following the patient's lead is generally discouraged. However, the therapist will consider personal issues that the patient is dealing with in recovery. These issues will not be dwelled on for most of the session. A therapist who follows this program should have a good working knowledge of the 12steps, readings, meeting places, and networking with other 12-step members.

Mutual Support Programs

Mutual support programs are supportive recovery resources for many patients with SUDs (Daley & Donovan, 2009). You can facilitate the use of these programs by educating the patient on the purpose and structure of the specific program to which he or she is being encouraged to participate. Provide brochures, written information, and meeting lists. Discuss and acknowledge the patient's resistances, questions, or concerns regarding self-help programs. It is also important, when relevant, to address common myths regarding mutual support programsbecause misinformation may affect an individual's openness and willingness to participate in a program. In addition, an individual's disclosure regarding a myth or myths may only come following active discussion of mutual support programs.

This is in direct support of the explicit approach to these programsas described above. A few of the more common myths you may encounter and some ways to address follow:

- I will be pressured to stop my medications if I attend 12-step meetings. (Possible response: "*You do not have to tell anyone except your sponsor that you are taking antidepressants. Also, if a member suggests you stop taking medications, ask where he or she received a medical degree.")*
- These programs only work for people who consider themselves to be religious. (Possible response: "*Some members may push religion, but most will not. Use the parts of the program that you believe in and think can help you, and forget the rest.")*
- There is no scientific evidence that these programs work. (Possible response: *"Actually this is not true. Those who get 'active' in the program—get a sponsor, work the steps, and use other components of the program—do better than those who do not. It has been demonstrated that these programs are helpful to many people.")*
- All of these programs are the same. (Possible response: "*There are many different types of meetings that focus on different types of addiction. They follow the same principles, but no two meetings are alike.")*

Help patients with high levels of social anxiety manage their anxiety and avoidant behavior, which can increase the likelihood they will attend mutual support programs. It may take time for these patients to feel ready to attend meetings. Other ways to help include the following:

- Discuss potential ways in which a specific program can aid the patient's recovery (e.g., *"Many of our other patients with alcoholism find AA meetings, getting a sponsor, and working the 12steps very helpful. They tell us the AA program helps them learn to live without drinking by managing their cravings and desires to drink, and by getting support from others who have faced the same challenges in recovery. This makes them feel that they do not have to recover alone.")*
- Provide specific recommendations regarding a type of mutual support program or particular meetings (e.g., "*Let's talk about small discussion group meetings that I think you will like. These give you a chance to share your ideas and experiences as well as listen to others. There are meetings each day at 7:00 a.m. in the Cathedral of Learning that many attend before going to work. Since you work close by, these meetings are convenient and at time that you prefer.*")
- Negotiate an agreement in which the patient will attend a certain number of meetings before making a judgment about the potential usefulness of a mutual support program (e.g., "*Thanks for sharing your concerns about NA meetings based on your past experiences. I would like to recommend that you attend 12 meetings before reaching any judgment on their usefulness in your recovery.*")
- Link the patient with members of mutual support programs who volunteer to help newcomers get acclimated into the programs as some patients are more likely to attend a program if they do not go alone (e.g., "*I know some of you are hesitant to attend meetings because*

of your anxiety or worries. We have a list of volunteers who will be glad to meet with you and take you to a few meetings to get your started. This way, you do not have to go alone and can learn from others involved in AA or NA.")

- Monitor participation and discussing both positive and negative experiences of the patient. (e.g., "*Tell me how your discussions with your AA sponsor are going. How is she helping you and what are you learning? Also, let me know if there are any problems with your involvement in AA.*")

Summary of Psychosocial Issues in Treatment and Recovery

The goals of treatment for addiction are to help patients accept the SUD, abstain from substances, address problems contributing to or resulting from their SUD, and make changes. Patients with less severe types of substance use problems may adopt the goal of reducing the amount and frequency of use. Treatment provides the opportunity to begin the process of recovery and participate in mutual support programs that provide long-term support for recovery.

The issues in treatment or recovery that the patient may address relate to physical, behavioral, cognitive, family, interpersonal and social functioning, personal growth, and lifestyle. Specific areas of focus in treatment depend on the motivation and the unique problems and needs of the individual patient, which may relate to age, gender, sexual identity, and cultural factors (see Table 8.1 for a summary of potential areas of focus).

Recovery refers to the process of the patient learning to manage the SUD and engaging in a mutual support program. The patient assumes a major role in recovery, identifying problems and goals, and takes responsibility for making changes in any of the domains of recovery. Such active involvement empowers the patient and builds on personal strengths. Recovery is viewed as an active process in which patients learn information about SUDs, treatment, and recovery; gain self-awareness; and develop coping skills to aid their recovery.

Psychiatric residents and fellows can help patients with SUDs by discussing problems or issues they are working on in treatment, helping them re-engage in psychosocial treatment if they have dropped out prematurely, and monitoring or discussing their recovery experiences. You can also ask about their participation in mutual support programs, how their recovery is going, what they are learning, what changes they are making, what barriers or roadblocks they are facing, or strategies to get back on track if they have relapsed to substance use.

Table 8.1 Psychosocial Issues in Treatment Recovery from Mental Health or Substance Use Disorders

Physical/Lifestyle • Exercise • Follow a healthy diet • Get rest and relaxation • Take medications (if needed) • Take care of medical problem • Learn to structure time • Engage in pleasant activities • Achieve balance in life	**Behavioral/Cognitive** • Accept the disorder(s) or problem(s) • Control urges to drink alcohol or use drugs • Change unhealthy beliefs and thoughts • Reduce depressed thoughts • Increase pleasant thoughts • Reduce violent thoughts • Control violent impulses • Develop motivation to change • Change self-defeating patterns of behavior
Psychological • Monitor moods and/or address mood disorders • Increase emotional awareness • Manage negative emotions or moods • Reduce anxiety • Reduce boredom and emptiness • Reduce depression • Reduce guilt and shame • Control anger/rage • Address "losses" (grief)	**Family/Interpersonal/Social** • Identify effects on family and significant relationships • Involve family in treatment/ recovery • Resolve family/marital conflicts • Make amends to family or other significant people harmed • Manage high-risk people, places, and events • Engage in nondrinking activities or healthy leisure interests • Address relationship problems or deficits • Resist social pressures to drink alcohol or use other drugs
Personal Growth/Maintenance • Address spirituality issues • Engage in meditation • Develop relapse prevention plan for all disorders or problems • Develop relapse interruption plan for all disorders or problems • Use "recovery tools" on ongoing basis	• Resolve work, school, financial, legal problems • Learn to face vs. avoid interpersonal conflicts • Learn to ask for help and support • Seek and use an AA or NA sponsor

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Chapter 9

Relapse Prevention

Dennis Daley and Lisa Maccarelli

Key Points

- Psychiatric residents and fellows can help patients with substance use disorders (SUDs) reduce their risk for relapse by providing education and support and by helping them identify and manage relapse warning signs and risk factors.
- Lapse and relapse are common during and after treatment. This is no different from other medical or psychiatric disorders in which relapses are common and should be addressed in treatment.
- The initial episode of substance use following a period of recovery is a lapse. This may or may not lead to relapse, depending on how the patient responds.
- Many factors contribute to relapse (emotional, behavioral, interpersonal, social, spiritual). These are referred to as high-risk factors or situations.
- However, relapse depends on whether or not the patient uses active coping skills to manage these high-risk situations.
- Although most pharmacological, psychosocial, and combined treatments aim to reduce relapse risk, several models of relapse prevention (RP) have been developed that focus on maintaining change over time.
- RP interventions can be adapted to individual or group sessions and incorporated by psychiatric residents or fellows into their sessions.
- Because lapse and relapse are realities for patients with SUDs, they can benefit from emergency plans that help them intervene early in a lapse or relapse.

Introduction to Recovery and Relapse

Relapse is common among individuals with substance use disorders (SUDs) (Marlatt & Gordon, 1985). Patients with SUDs are no different from those with other psychiatric or medical disorders in that they may experience relapse during or after treatment (Dennis & Scott, 2007; McLellan, Lewis, & O'Brien, 2000). Psychiatric residents and fellows can help patients by facilitating, supporting, and monitoring their involvement in recovery as well as working collaboratively with their therapists or counselors. You can also educate patients and assist them in learning and using relapse prevention (RP) skills, such as the early identification and management of the warning signs of relapse, identifying and managing individualized high-risk factors, and intervening early if a lapse or relapse occurs.

This chapter provides an overview of recovery from SUDs and relapse. We start with a discussion of recovery, followed by definitions of lapse and relapse and a brief review of outcome studies. We then provide a review of treatments aimed at reducing the risk for relapse among patients with SUDs, present models of care in which RP is the main focus, and discuss intervention strategies you can use to help patients reduce their risk for relapse or intervene early should a lapse or relapse occur. Our goal is to assist you in being more effective in your work with patients, and to think about relapse in ways that lead to more effective interventions.

Recovery

Recovery is a process of initiating abstinence from substances and making intrapersonal and interpersonal changes to maintain this over time (CSAT, 2006; Daley & Douaihy, 2011; White, Kurtz,& Sanders, 2006). Specific changes and improvements vary among people with SUDs and occur in any area of functioning: physical, psychological, behavioral, interpersonal, family, social, spiritual, occupational, and financial.

The focus of treatment and specific recovery tasks depend on the stage of change of the patient (e.g., precontemplation, contemplation, action). Recovery and relapse are affected by the severity of the SUD, the presence of comorbid psychiatric or medical disorders, the patient's motivation to change, gender, ethnic background, coping skills, and access to social support. Recovery is not a linear process, so it is common for many individuals with SUDs to participate in several episodes of treatments over a number of years before they sustain their recovery over the long term. Although some individuals may achieve full recovery, others achieve a partial recovery. The latter may experience multiple relapses over time. Also, some patients do not want recovery. They may want help with their SUD, but are not interested in engaging in recovery. For some, this may mean they want your help stopping their use, or they only want medications to manage their addiction to opioids (e.g., some want buprenorphine without any therapy).

You can facilitate recovery for patients in several ways: (1) assess their interest in recovery and how they view it and their role in change; (2) discuss the importance of recovery and provide education about the recovery process and resources that can help them; (3) recommend readings or provide them with interactive workbooks or books on recovery from SUDs; (4) encourage them to explore recovery issues or barriers to recovery in more depth in their individual or group therapy sessions; (5) monitor their involvement in recovery and find out how they are doing, what is helping them, and what else they can do to maximize their recovery; and (6) facilitate their involvement in mutual support groups that provide a "program" to follow.

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Substance Use Lapse and Relapse

Lapse refers to a single episode of use that may not lead to continued use and an eventual relapse (Marlatt & Donovan, 2005; Marlatt & Gordon, 1985). *Relapse* refers to ongoing use of substances. Lapses and relapses vary from mild to severe in terms of amount and frequency of substance use and the impact on the patient's life as well as others, such as the family. The greatest risk period for relapse is the first 3 months of treatment. During this early recovery period, patients may feel ambivalent about abstinence, lack a solid commitment to sobriety, not have sufficient coping skills, or lack social support.

Causes of Lapse or Relapse

You can help patients increase their understanding of common factors contributing to lapse or relapse, identify specific high-risk factors, develop plans to manage their risk factors, and collaborate with other caregivers to develop a relapse prevention plan or a plan to interrupt a lapse or relapse. Because clinicians often spend more time with patients than you, be sure to elicit their input about a specific patient and factors they think put this patient at risk for relapse or factors that may have contributed to an actual relapse.

When possible, teach your patients that it is usually a combination of factors that contribute to a lapse or relapse rather than a single factor. These may include any of the following (Bradizza, Stasiewicz, & Paas, 2006; Catalano et al., 1988; Condon et al., 2011; Daley, 2011; Daley & Douaihy, 2011; Douaihy et al., 2009; Gossop et al., 2002; White et al., 2006; Marlatt & Donovan, 2005; Miller et al., 1996; Noone, Dua, & Markham, 1999; McKay, 1999; Zywia et al., 2006):

1. *Affective.* Upsetting emotional states, such as anger, anxiety, boredom, depression, and loneliness, and in a small number of relapses, positive emotional states affect relapse. It is not the emotional state, but rather is whether or not the patient uses active coping strategies, that determines whether a lapse or relapse occurs. In some instances, negative emotional states may reflect a mood or anxiety disorder that requires assessment and treatment. You can assess patients for co-occurring psychiatric illness and help manage disorders that require psychiatric intervention.
2. *Behavioral.* Poor problem solving, social, stress management, and leisure time management skills can affect relapse. The greater the repertoire of cognitive and behavioral coping skills, the more likely the patient is to cope without using substances. The use of skills or coping strategies, more than the high-risk situation, determines the actual outcome.
3. *Cognitive.* The patient's attitudes or beliefs and thinking about substance use or recovery, beliefs about the ability to cope with difficult situations, and expectancies for behaviors can contribute to relapse. For example, if a patient believes that she can successfully cope with a difficult challenge such as a drug craving or pressures from others to use substances, relapse is less of a threat to recovery.

A patient with low self-efficacy who does not believe she can cope with a high-risk situation is at increased relapse risk. A patient with positive outcome expectancies related to substance use ("I think I'll smoke a joint to relax") is also at increased relapse risk. Using substances to cope with stress implies an expectation that substances will relieve the stress in that situation. Negative outcome expectancies ("If I drink I'll have a hangover tomorrow or cause havoc in my marriage") can reduce relapse risk. Attribution of causality is a cognitive process that is relevant when a patient engages in substance use because these attributions influence later behaviors. For example, a patient who believes an initial lapse will lead to total loss of control and was caused by personal "weakness" is more likely to continue using substances. If a patient believes that he used substances *because he made the mistake of not using his recovery skills,* he is more likely to stop the lapse before it gets out of control. Poorer cognitive functioning is associated with worse substance use outcomes because cognitive dysfunction can interfere with the ability to benefit from treatment, learn and process new information, follow directions, and make decisions.

4. *Conditioned cues (triggers).* The repeated pairing of substance use with places, events, people, things (objects), and internal states results in triggers. Your patient may have a strong physiological response experienced as an intense craving for alcohol or drugs as a result of a trigger. The severity of the SUD influences the range and number of conditioned cues, the strength of the response to the conditioned cues, and the tendency to pay more attention to conditioned cues related to substance use than to other elements of one's environment.
5. *Co-occurring psychiatric disorder (COD).* A COD can affect recovery and contribute to poor treatment outcomes, including relapse to either disorder. Symptoms of intoxication or withdrawal from drugs and alcohol can mimic or mask symptoms of co-occurring psychiatric disorders. When possible, help your patient get "integrated treatment" that focuses on both the SUD and the psychiatric illness.
6. *Environmental.* The easy availability of substances, social pressures to engage in substance use, and major unexpected life changes for which the patient is ill prepared can affect relapse. Poor social support systems or networks with others who have active SUDs can threaten a patient's recovery. Family members who are nonsupportive or hostile can create tension and negative emotions. For example, Lenny's wife often berated him when he was sober and even told him once that she liked him better when he was drinking. After repeated conflicts with his wife, Lenny said, "*I got tired of being attacked by her. I couldn't do anything right. So I said the hell with it and starting drinking again.*" Although Lenny has to assume responsibility for his relapse, his wife did play a role. After he was stable from his relapse, Lenny's counselor worked with him and his wife and discovered that her hostility toward him was caused in part by her feeling threatened that her role as primary parent was changing as their children took more to Lenny when he got sober. Even though she knew her kids needed their father, sharing the power in the family was an adjustment for her.

7. *Interpersonal or social.* Pressures from others to use substances, conflicts with family members or friends, the influence of a negative social network (e.g., mainly consisting of others who have substance problems), or lack of nonsubstance leisure activities can contribute to relapse. However, it is the patient's use or nonuse of coping skills that determines whether a relapse occurs in response to these problems.
8. *Multiple SUDs.* These increase risk for relapse and treatment dropout. For example, patients who are diagnosed with cocaine dependence and co-occurring alcohol dependence are at high risk for leaving treatment before completion. Alcohol or marijuana can be a powerful conditioned cue for cocaine use and may increase patients' desires for cocaine.
9. *Physical.* Strong cravings for substances, pain, or use of medications for medical problems that trigger an addictive urge can affect relapse. For example, a patient recovering from an opioid addiction who was prescribed a narcotic to ease the pain after dental work can experience a reawakening of the desire for drugs. Chronic and acute pain is difficult to manage in people who are opioid dependent. Management requires a team effort involving addiction medicine, pain management, and other relevant medical specialties. Even time-limited use of medically necessary opioids in controlled settings can be a risk factor for relapse. Close collaboration with medical providers can help you better manage your addicted patients.
10. *Stress.* Exposure to high-risk factors can increase stress, especially if it creates an imbalance between "wants" and "shoulds." If the patient views the benefits of substance use more highly than those of abstinence or recovery, he raises his risk for relapse.
11. *Spiritual.* Strong feelings of guilt and shame, and lack of meaning or purpose in life or feeling disconnected with others may contribute to relapse. Some patients feel an "emptiness" or "void" when they stop using substances and need help changing their thinking if they are to sustain recovery. Others need to develop new behaviors and get involved in activities that they find enjoyable or bring them meaning. Many in the latter stages of recovery report that helping others in 12-step programs, involvement in formal religion, or the pursuit of spiritual knowledge adds meaning to their lives.
12. *Treatment-related stresses.* Any treatment provider can contribute to a patient's relapse through negative attitudes, negative feelings, or enabling behaviors. For example, following a relapse, Kala returned to treatment and was told by a therapist in one of her early sessions that she was not serious about her recovery because she had problems complying with treatment sessions and Narcotics Anonymous (NA) meetings. Kala knew she had motivational struggles but felt judged by this therapist and dealt with it by dropping out of treatment without having a discussion with her therapist. Although the therapist may have been well meaning, she conveyed judgment in her statement at a time when the patient was very vulnerable. One of the common systems issues that may

indirectly affect relapse is that so much emphasis is placed on the acute phase of treatment (the first several months). Many addiction treatment programs do not provide the long-term follow-up that is common with chronic mental disorders, expecting that mutual support programs will provide the ongoing help that patients need. Although this may be true for many, it is not true for all patients, many of whom could benefit from long-term connections with treatment providers.

Outcomes of Treatment

Clinical studies and reviews of the treatment outcome literature show that while many patients improve, relapse rates are high, which is similar to other chronic disorders (McLellan et al., 2005; NIDA, 2008). The primary outcome measure usually relates to substance use, but other outcome measures can include functioning in any domain (medical, social, psychological, spiritual, and occupational) and quality of life. Do not view recovery as a linear process because relapses do occur despite improvements in any area of life or in the quality of life.

Numerous reports by the National Institute on Drug Abuse (NIDA), the National Institute on Alcohol Abuse and Alcoholism (NIAAA), and the Center for Substance Abuse Treatments (CSAT) document the following positive outcomes for treatment of alcohol and drug abuse: cessation or reduction of substance use; decreases in post-treatment medical care and medical costs; decreases in work problems, including absenteeism and working under the influence; decreases in traffic violations and other arrests; and improvement in psychological, social, and family functioning.

Individuals who relapse do not always return to pretreatment levels of substance use. The actual quantity and frequency of use can vary. Because drug and alcohol use is only one outcome measure, an individual may show improvement in other areas of life functioning despite an actual lapse or relapse to substance use. Patients who remain in treatment the longest usually have the best outcomes. You can help patients by discussing problems with adherence and ways for them to remain in treatment for a significant period of time because early dropout raises the risk for relapse.

Models of Relapse Prevention

The most common is the cognitive behavioral model of Marlatt and colleagues that has been used with all types of SUDs, in individual, conjoint, and group sessions, and with other clinical populations such as overeaters, compulsive gamblers, individuals with problems controlling sexual behaviors, and individuals with psychiatric disorders (Litt et al., 2003; Marlatt & Donovan, 2005; Marlatt & Gordon, 1985; Witkiewitz & Marlatt, 2007). RP aims to help patients maintain changes over time, with the patient serving as a co-therapist. This approach assists patients in addressing their unique high-risk factors and in learning to use a variety of coping strategies to manage these. To improve personal habits or lifestyle, patients may also learn and use other "global" self-control strategies, such as exercise, relaxation, meditation, self-hypnosis, and "balanced" living. More recently, this

RP approach has been integrated with mindfulness meditation practices to help patients learn new types of skills to aid recovery and reduce relapse risk (Bowen, Chawla, & Marlatt, 2011).

Most RP models incorporate principles from Marlatt's original conceptualization of relapse and focus on helping patients (Daley & Douaihy, 2011; Gorski &Miller, 1982; NIDA, 1994; Rawson et al., 2005; SAMHSA, 2008):

1. Learn cognitive and behavioral coping strategies to manage warning signs of relapse and high-risk situations. These skills can be adapted to many situations.
2. Engage in mutual support programs and develop a recovery social support system. Patients who actively use these programs do better than those who only attend meetings.
3. Make lifestyle changes to decrease the need for alcohol or other drugs. This may involve new activities, new friends, and new daily routines.
4. Increase healthy nonsubstance activities and pleasures. Many patients need to learn how to enjoy ordinary pleasures in life. Some need to find new activities because most of their time evolved around substance use–related behaviors.
5. Prepare to stop a lapse or relapse early to minimize adverse effects. An emergency plan helps patients take action early to minimize damage caused by a lapse or relapse.

Research Support for Relapse Prevention

All treatments for addiction aim to reduce the risk for relapse. Outcome studies show that there are many behavioral, medication, and combined treatments that are effective in doing this even though many clients relapse. Most psychosocial treatments of addiction incorporate strategies from the RP literature. There is also clinical and research literature specific to RP. Literature reviews, meta-analyses, and results from multiple studies show that RP is effective in improving recovery and reducing relapse rates. Following is a brief summary of research findings:

1. *Review of randomized trials.* Carroll reviewed 24 randomized, controlled clinical trials of RP among smokers, alcohol abusers, marijuana abusers, cocaine abusers, opiate addicts, and other drug abusers (Carroll, 1996). She reported that RP is superior to no-treatment control groups, especially with smokers. Carroll also reported that RP holds the greatest promise in helping the addicted individual maintain gains after stopping substance use and reducing the severity of relapses when they occur. Clients with higher levels of psychiatric and addiction severity appear to benefit most from RP. Thus, RP may be especially helpful for clients with co-occurring psychiatric disorders.
2. *Meta-analysis of clinical trials.* Irvin and colleagues conducted a meta-analysis of 26 clinical trials on RP with a total sample of almost 10,000 participants (Irvin et al., 1999). The RP approach used in these studies was consistent with Marlatt's cognitive behavioral approach to RP. Irvin found that the strongest treatment effect for RP was with

patients who had problems with alcohol or polysubstance use. They also found that individual, group, and marital modalities appeared to be equally effective, and that medication is very helpful in reducing relapse rates, particularly for the treatment of alcohol problems.

3. *RP delivered in groups.* Several studies found that RP administered in groups is as effective as RP delivered in individual sessions (Schmitz et al., 1997).
4. *RP including spouses.* Several studies included spouses in the RP intervention. Maisto and colleagues' study of the first relapse episodes and reasons for terminating relapse of men with alcoholism who were treated with their spouses found that the relapses of clients receiving RP in addition to behavioral marital therapy (BMT) were shorter than those of clients not receiving the RP (Maisto, McKay, & O'Farrell, 1995). O'Farrell found that abstinence rates at 12 months were highest for those who received BMT in combination with RP (O'Farrell & Fals-Stewart, 2006). Alcoholics who received RP after completing BMT had more abstinent days, fewer days drinking, and for those with the poorest functioning at baseline, improved marriages compared with those who received only BMT.
5. *Delayed effects of RP among cocaine abusers and smokers.* Several studies found a "sleeper effect," or delayed improved treatment response, for patients who received RP (Regier, 1990). These findings are consistent with the idea that learning new ways to cope with high-risk situations takes time for the client with an SUD.
6. *RP with alcohol problems.* A number of studies showed that RP leads to reduced drinking, fewer episodes of intoxication, less severe lapses for shorter periods of time, and stopping drinking much sooner after a relapse compared with clients in control condition (Laudet, Morgen, & White, 2006; Monti et al., 2002; Moser & Annis, 1996). Patients receiving RP have fewer drinks and fewer days drunk than those in the control conditions.
7. *Medication combined with counseling.* Many studies show that patients receiving RP and medication-assisted treatment, such as naltrexone for alcoholism, are less likely to relapse to heavy drinking after a lapse compared with a control group (Anton et al., 2006; Bouza et al., 2004; CSAT, 2005; Mann, Lehert, & Morgan, 2004).

Although RP may not always be better than another behavioral treatment it is compared with, results of studies show it is often as good as these other treatments. This suggests that many treatments are effective and help reduce relapse rates among clients receiving treatment, including RP. As experienced clinicians know, treating addiction is a challenge because of the complexity of problems presented by clients, varying levels of motivation, and degrees of social support. Despite limitations associated with various studies, the literature shows that RP strategies enhance the recovery of individuals with SUDs and improve substance use outcomes.

Interventions to Aid Recovery and Reduce Relapse Risk

In this section we discuss interventions that can be used with patients to facilitate their recovery and reduce their risk for relapse (Daley & Douaihy, 2011; Marlatt & Donovan, 2005; NIDA, 1994; Witkiewitz & Marlatt, 2007).

These include identifying triggers and managing resulting cravings; changing cognitive distortions; identifying high-risk situations; identifying relapse warning signs; managing emotional states and moods that may precede relapse; focusing on co-occurring psychiatric disorders; resisting social pressures to use substances; developing a recovery network or support system; using medication as part of a treatment plan; improving adherence to treatment and the recovery plan; and managing a lapse or relapse. Although you may not have sufficient time in sessions with patients to implement these interventions, you can encourage your patients to work on these issues with their therapist and other team members. Your knowledge of these interventions will allow you to support your patient's participation in treatment more directly. Also, getting and giving feedback among team members helps you and other clinical staff develop RP plans for patients based on their individual issues and needs.

1. *Identify triggers and manage cravings.* A patient's craving for a substance can be triggered by environmental cues associated with prior use, such as the sight or smell of the substance, a place where substances were used, a person with whom the patient used, drug paraphernalia, and other related objects or experiences. Cravings have physiological and psychological components. AA, NA, and other 12-step programs recommend that patients in recovery "avoid people, places, and things" associated with substances to minimize exposure to cues. Encourage your patients to remove substances from their homes as well as paraphernalia (e.g., pipes, mirrors, needles) used for taking drugs. Teach the patient cognitive techniques, such as monitoring and recording cravings and associated thoughts and behaviors; changing thoughts about the craving or desire to use; challenging euphoric recall; talking oneself through the craving (e.g., thinking beyond the high by identifying negative consequences of using and positive benefits of not using); repeating using recovery slogans (e.g., "this too shall pass"), and delaying the decision to use when craving a substance. You can also teach behavioral interventions, such as avoiding, leaving, distracting, or changing situations that trigger or worsen a craving; redirecting activities or getting involved in pleasant activities that bring enjoyment; reaching out for support from others by admitting and talking about cravings and hearing how others have survived them; attending mutual support group meetings; or taking medications such as naltrexone or acamprosate that may reduce cravings.
2. *Change cognitive distortions.* Errors in thinking are associated with a wide range of mental health and SUDs (Beck, Wright, & Liese, 1994). These distortions have also been implicated in relapse to substance use. Twelve-step programs refer to cognitive distortions as "stinking thinking" and suggest that recovering individuals need to alter their thinking if they are to remain alcohol and drug-free. Teaching patients to identify their cognitive errors (e.g., all or nothing/black-and-white thinking, "awfulizing," overgeneralizing, using selective abstraction, catastrophizing, or jumping to conclusions) and evaluating how these affect the relapse

process are often very helpful. Patients can then be taught to use counter-thoughts and self-talk to challenge their faulty beliefs or specific negative thought patterns. Patients can be provided with a sample worksheet to help them learn to challenge and change relapse thoughts. This worksheet has three directives: (a) list the relapse-related thought; (b) state what is wrong with it; and (c) create new/alternate statements. A list of seven specific thoughts commonly associated with relapse is used to prompt patients in completing this therapeutic task. These examples include, "Why should I take medications to help me deal with my alcohol addiction?"; "Relapse can't happen to me"; "I'll never use alcohol or drugs again"; "I can control my use of alcohol or other drugs"; "A few drinks, tokes, pills, lines won't hurt"; "Recovery isn't happening fast enough"; "I need alcohol or other drugs to have fun"; and "My problem is cured." Patients seldom have difficulty coming up with additional examples of specific thoughts that can contribute to a relapse. Many of the slogans in 12-step programs, such as "This too will pass," "Let go and let God," and "One day at a time" help the patient work through thoughts of using.

3. *Identify high-risk situations.* These situations are those in which a patient may have used substances in the past or in which the patient feels vulnerable to using substances. These relate to the categories discussed earlier (causes of relapse). The most common is the patient's inability to manage a negative emotional state such as anxiety, anger, boredom, emptiness, depression, guilt, shame, and loneliness (Daley, 2011). Other common high-risk factors are direct or indirect social pressures to use substances, interpersonal conflicts, strong cravings, pain, or positive emotions. You can help your patients by identifying and discussing strategies to manage specific high-risk factors. Strategies should be based on the unique features of the high-risk situation for each patient. For example, anger problems with one patient may require helping this individual learn to accept and express anger appropriately rather than drinking alcohol. Anger problems with another patient may require helping this individual to control anger and rage, and not express it in interpersonal encounters. Depression for one patient may require active participation in nonsubstance leisure activities, whereas for another, it may be a symptom of a clinical disorder requiring psychiatric intervention.
4. *Identify relapse warning signs.* Obvious and subtle warning signs often show before a lapse or relapse (Daley, 2011; Gorski & Miller, 1982). These signs show in changes in attitudes, thoughts, feelings, and behaviors. An example of a common and obvious warning sign is when a patient reduces or stops attending treatment sessions and/or mutual support meetings without first discussing this decision with a therapist or sponsor. Another common warning sign is when the patient seeks out and socializes with other people with whom he used alcohol or drugs. Subtle warning signs vary among patients. For example, a patient may become more dishonest in his daily dealings with others, which represents a potential relapse warning

sign. One helpful strategy is to teach patients about common relapse warning signs and ways to manage these. Another is to help patients learn which warning signs may be unique to them. Another helpful intervention is helping patients reframe "failure" associated with relapse to a "learning experience" that can help them improve their recovery.

5. *Resist social pressures to use substances.* Imagine that you had an addiction to alcohol or drugs for more than 10 years and finally got help. You have been sober about 3 months, and unexpectedly, you encounter an old friend who is pushing hard to get you to drink (or use drugs) together. Pay attention to what thoughts go through your head and what you feel. How would these thoughts and feelings influence your decision to use or not use in response to this social pressure? Direct and indirect social pressures often lead to increased thoughts and desires to use substances, as well as anxiety regarding one's ability to refuse offers to drink alcohol or use other drugs. You can help your patients identify high-risk relationships (e.g., living with or dating an active drug abuser or alcoholic) and situations or events in which the patient may be exposed to or offered substances (e.g., social gatherings). The next step is to assess the effects of these social pressures on the thoughts, feelings, and behaviors of the patient. Planning, practicing, and implementing coping strategies is the next step. These coping strategies include avoidance and the use of verbal, cognitive, or behavioral skills. Role playing to rehearse ways to refuse offers of drugs or alcohol is one very practical and easy-to-use intervention. The final step of this process involves teaching the patient to evaluate the results of a given coping strategy and to modify it as needed.
6. *Develop and utilize a support system* (Laudet et al., 2006; Daley & Donovan, 2009; McCrady, Epstein, & Kahler, 2004). Help your patient evaluate his current support system to determine who to exclude and who to engage. Some patients need to learn how to ask others for support. Talk with your patient about the impact of the addiction on the family or concerned significant others and how to involve them in treatment and recovery. Encourage your patient to get actively involved in Alcoholics Anonymous (AA), NA, or other mutual support groups. For patients in 12-step programs, suggest that they get and use a sponsor, get a list of phone numbers and email addresses of others in recovery, touch base daily with others in recovery, and attend recovery and social events sponsored by these programs.
7. *Managing negative and positive emotional states and moods* (Daley, 2006, 2011, 2012). Many patients with SUDs struggle in the identification of, as well as in their ability to tolerate, emotional experiences. Patients have used substances to interrupt and avoid emotions, and therefore, exposure to emotions without the use of substances can be extremely difficult and a significant risk factor for relapse. Both positive and negative emotional experiences may affect recovery. Where positive affect has been linked to lapses, negative emotions and moods have been associated with major

relapse across a range of addictions. As a result, the focus on emotional states and moods is critical, including assisting patients in teasing out and identifying their emotional experiences and providing skills to help in the management and positive expression of these emotions. Patients may also struggle with secondary emotions such as anger as a way to avoid painful primary emotional experiences. For example, the acronym HALT used in 12-step programs (which stands for, "don't get too hungry, angry, lonely, or tired") speaks to the importance of the recovering person's not allowing himself or herself to become too vulnerable, including too angry or too lonely, because these two emotional states are seen as high-risk factors for many. Other high-risk emotional experiences may include shame and guilt, boredom, grief and loss, anxiety, and sadness. In addition, if you believe a mood or anxiety disorder is present, integrate psychiatric interventions into the plan to explicitly address the co-occurring disorders.

8. *Address co-occurring psychiatric disorders.* Because there are high rates of psychiatric disorders among patients with SUDs, work with your team to determine whether integrated treatment is needed for a co-occurring disorder (Daley & Douaihy, 2010; Daley & Moss, 2002; Daley & Thase, 2004; Drake, Wallach, & McGovern, 2005; Kessler et al., 1997; Mueser et al., 2003; Regier, 1990). These patients are at higher risk for relapse than those with only a substance use diagnosis, which can result from the effects of psychiatric symptoms on motivation, judgment, and functioning. Patients with co-occurring disorders also have higher rates of poor compliance with medications and therapy sessions, so be sure to talk about the importance of compliance and about how poor compliance is a high-risk factor for relapse to substance use as well as a return or worsening of psychiatric symptoms. If co-occurring disorders are present, an integrated treatment approach is critical. This allows patients to better understand the relationships among their substance use and mental health diagnoses. This increased awareness can directly influence a patient's level of vulnerability for relapse as well as his or her ability to intervene early if a lapse or relapse does occur.
9. *Offer medication-assisted-treatments for alcohol, opioid or nicotine addiction.* Some patients benefit from medications to attenuate or reduce cravings for alcohol or other drugs, enhance motivation to stay sober, and increase confidence in their ability to resist relapse (Bouza et al., 2004; Carroll et al., 1994; CSAT, 2005, 2006). Others need medications to replace addictions (e.g., methadone or buprenorphine for opioid addiction). Talk with your patients and other team members about medication options. Stress with patients the importance of psychosocial treatments and mutual support programs in addition to medications because some will only want medicine and not want to participate in other treatment or mutual support program recovery activities. Your biggest challenge with medication-assisted treatment may be with other clinicians, some

of whom may not value or recommend medications to addicted patients as part of their plan.

10. *Focus on the transition between levels of care*. Many patients do well in hospital or residential treatment programs, only to have these negated as a consequence of failure to adhere to ongoing care. If you work on a psychiatric or dual diagnosis unit, addiction hospital, or residential program, stress the importance of follow-through after discharge with your patients. Linking patients to ongoing care or recovery check-ups can improve outcomes (Daley & Zuckoff, 1999; Dennis, Scott, & Funk, 2003; Scott, Dennis, & Foss, 2005). Encourage multiple relapsers to learn from past experiences and develop an RP plan with their therapy team members. Questions to consider asking patients include: What was going on with you that you did not follow through with care after your previous (hospital, residential) discharge? Why is continuing your care after discharge important? What might get in the way of following through? What will you do to make sure to continue treatment once you leave the unit (or program)?
11. *Managing lapses and relapses.* Patients need to prepare to intervene early to prevent a lapse from becoming a relapse, or to stop a relapse before it gets out of hand. The patient's initial emotional and cognitive response to a lapse determines whether there is a return to recovery or movement further down the road to relapse. Patients may feel angry, depressed, guilty, or shameful following a lapse or relapse. They may think, *"I'm a failure, I'm incapable of changing, I just can't do it, or why even bother trying,"* which can fuel the relapse further. Teaching patients to challenge such negative thoughts and to rehearse a plan to interrupt a lapse or relapse ahead of time can prepare patients to take action rather than passively accept that there is nothing they can do.

Case Vignette

Brian is a 37-year-old, employed, married father of three children, ages 7 to 14 years, with an 8-year history of alcohol dependence with several treatment episodes followed by periods of sobriety up to 30 months. In the past he completed a 3-week residential program, completed a 6-week intensive outpatient program, and attended outpatient therapy on several occasions. Brian also involved his family in treatment sessions and was active in the AA program, although in recent months, he decreased this involvement significantly because he got very busy at work.

His recent relapse lasted about 1 month, during which time he drank excessively, mainly on weekends. Brian reluctantly returned to treatment when his wife Cindy insisted he do so or else she would take their kids and move in with her parents. Cindy stated he had been doing well in his recovery and seemed a bit shocked when he had this recent relapse.

As the practitioner trainee working with the treatment team at an outpatient program where Brian sought help, you consider the following questions:

- What are the issues related to recovery and relapse that you think need to be addressed?
- How can you help Brian learn from his relapse experiences and prepare for his ongoing recovery?
- Would you consider medications for his alcoholism and, if so, why and which ones?
- What is the role of the family in this process and how should they be involved?

Answers to Case Vignette

What are the issues related to recovery and relapse that you think need to be addressed?

You need to help Brian with understanding relapse (resumed use is common following addiction treatment as in the care of any chronic medical illness) as a "process and event" and learning to identify early warning signs such as his decreased involvement in AA meetings that preceded his relapse and his decreased motivation for getting re-engaged in treatment and AA involvement (treatment adherence and family involvement to reduce relapse risk). You should also address the issues of understanding recovery as an ongoing process of abstinence and change and of understanding the importance of continuing to work a "recovery program" that includes involvement in therapy, AA, and balancing his lifestyle (remaining employed at the same time working his recovery program).

How can you help Brian learn from his relapse experiences and prepare for his ongoing recovery?

The therapeutic approach with Brian includes identifying his thinking patterns and the sequence of events leading to the episode of use (lapse leading to relapse) and targeting points of intervention. Reviewing his relapse cues preceding relapse, such as being overconfident about his sobriety, disengaging from AA involvement and outpatient therapy, and learning how to cope with his busy job and at the same time stay focused on his recovery program. Learning how to reach out for help and particularly relying on his support from his wife would help him reduce his risk for relapsing.

Would you consider medications for his alcoholism and, if so, why and which ones?

The goal of using medication is to help Brian with relapse prevention. We have to clarify to Brian that the medication is a tool to help reduce cravings for and reward from alcohol use, thus helping him achieve and sustain recovery. Some medications to consider are naltrexone (oral or injectable form), acamprosate, and topiramate.

What is the role of the family in this process and how should they be involved?

Involvement of family members such as his wife can help her become more aware of relapse warning signs and how to point them out to him. Involving his wife in his therapy session helps her learn what she can and cannot do to help support him in his recovery. Participation in treatment sessions or support groups (Al-Anon) can also help his wife learn to deal with their own feelings and reactions to Brian's addiction.

Summary

As with other chronic medical or psychiatric conditions, relapse is common among patients in treatment for an SUD. You can help your patients identify and manage their high-risk factors, catch and intervene when early warning signs of a potential relapse are present, and prepare to take quick action should a lapse or relapse occur. There are many clinical and pharmacologic interventions that can enhance recovery and reduce the risk for relapse in these patients. Be sure not to judge patients who relapse as unmotivated or convey negative reactions. Instead, help them to learn from their mistakes and work with them and/or their team to integrate recovery and relapse prevention skills into their treatment. And, when feasible, make sure the family is a part of this process.

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Chapter 10

Hepatitis C Virus, Human Immunodeficiency Virus, and Substance Use Disorders

Shannon Allen and Antoine Douaihy

Key Points

- Injection drug users (IDUs) represent a disproportionately large burden of hepatitis C infection.
- Chronic infection with the hepatitis C virus (HCV) is frequently complicated by the presence of coexisting substance use disorders (SUDs) and psychiatric disorders.
- The continuing reluctance to treat IDUs is driven by concerns about the risk for reinfection, high rates of concomitant alcohol abuse, and high rates of co-occurring psychiatric disorders, all potentially affecting treatment compliance and effectiveness.
- The available evidence suggests that IDUs can be successfully treated for HCV.
- Substance abuse has been linked to many new cases of human immunodeficiency virus (HIV) infection.
- Seeking out high-risk, hard-to-reach substance abusers and offering them HIV testing, access to treatment, and the interventions to remain in treatment—both for HIV and for substance abuse—is needed to help curb the epidemic.
- The evidence makes a strong case for integrating HIV, substance abuse, and mental health care, which improve outcomes in this population.

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Hepatitis C Virus

The Centers for Disease Control and Prevention (CDC) estimate that there are up to 3.9 million people in the United States, or 1.9% of the total population, currently infected with hepatitis C virus (HCV) (Armstrong et al., 2002). Ninety percent of new infections worldwide (about 54% in the United States) are contracted through injection drug use (Armstrong et al., 2002). Every year, 8,000 to 10,000 people in the United States die from HCV-related causes and more than $600 million is spent annually on related health care costs (Murphy et al., 2012). In the past decade, trend analyses have documented an increase in the mortality rate associated with HCV, and in 2007, HCV infection had a higher associated mortality rate than both hepatitis B virus (HBV) and human immunodeficiency virus (HIV) (Murphy et al., 2012). Moreover, HCV has surpassed alcohol as the main cause of chronic liver disease, cirrhosis, and orthotopic transplantation in the United States (CDC, 2009; Kim, 2002).

Transmission

Before the 1990s, there was little knowledge or education regarding blood-borne viruses, and as a result, many people were initially infected with HCV in the period between 1970 and 1992 (CDC, 2009). With the discovery of blood-borne viruses, public health initiatives were implemented to mandate screening of blood products and to discourage needle sharing. Screening of donated blood has decreased the risk for transfusion-associated HCV infection to less than 1 in 100,000 transfused units (CDC, 2009). After 1992, intravenous drug use exceeded blood transfusion as the main route of transmission in the United States (CDC, 2009). Recent surveys of active intravenous drug users (IDUs) indicate that approximately one-third of young (18 to 30 years) IDUs are HCV infected. Older IDUs typically have a much higher prevalence (70% to 90%) of HCV infection (CDC, 2009). Seroconversion to HCV in IDUs can occur at any point in the course of drug use, but most IDUs seroconvert within the first 1 to 3 years (Hagan et al., 2004). Current studies have not clearly demonstrated whether specific behaviors of non-IDUs are associated with HCV infections (Scheinmann et al., 2007). Uncommon routes of transmission of HCV, which affect less than 5% of individuals, include high-risk sexual activity, sharing drug paraphernalia (e.g., straws used for snorting cocaine), sharing contaminated personal items (e.g., razors, toothbrushes), and maternal–fetal transmission. Sexual transmission of HCV is rare, except in people who are infected with HIV. However, some recent evidence suggests that HCV might be passed through sex, if this activity includes the possibility of blood exposure (Tohme & Holmberg, 2010). Occupational exposures, including needlestick injury and mucosal exposure, account for about 3% of transmissions. Inefficient modes of transmission include casual contact with saliva, snorting or smoking cocaine, and breastfeeding. The CDC have determined that HCV does not pass into the breast milk, but they recommend that women with cracked nipples or active bleeding abstain from breastfeeding until the breasts have healed.

Screening

The most common test for HCV detects antibodies to HCV in the blood. A "positive" HCV antibody test could mean that the person is a chronic carrier of HCV (75% to 85%), has been infected but has resolved infection (15% to 25%), or is one of the few recently infected (CDC, 2010). Following HCV infection, it usually takes at least 6 to 8 weeks for the body to develop antibodies. People who have a positive test result on an HCV antibody screening test should get additional testing, such as a follow-up qualitative HCV RNA test, which indicates whether the virus is present. If HCV RNA is present for at least 6 months, the HCV infection is considered chronic. The accuracy of a negative HCV antibody test result is very high. To account for a 6-month window period, people who engage in high-risk behaviors should be retested every year (Backmund et al., 2005).

Progression of Infection

Most individuals who are acutely infected with HCV remain asymptomatic and are infrequently diagnosed. Clinical manifestations after acute infections can occur in up to 20% to 30% of patients, usually within the first 3 to 12 weeks after exposure to HCV (Alter & Seeff, 2000; Thimme et al., 2001). These symptoms typically include malaise, weakness, anorexia, and jaundice. Serum alanine aminotransferase (ALT) levels, signifying hepatocyte necrosis, begin to increase 2 to 8 weeks after exposure and often reach levels of greater than 10 times the upper limit of normal (Farci et al., 1991; Thimme et al., 2001). Chronic hepatitis C is marked by the persistence of HCV RNA in the blood for at least 6 months after onset of acute infection. Rarely, the virus will be spontaneously cleared, whereby the HCV RNA in the serum becomes undetectable and the ALT levels return to normal (Chen & Morgan, 2006). The rate of developing chronic HCV infection is affected by many factors, including the age at time of infection, male gender, African American ethnicity, the development of jaundice during the acute infection, and HIV infection (Chen & Morgan, 2006). Up to 85% of patients with acute hepatitis C will remain HCV infected (Loftis et al., 2006; Seeff & Hoofnagle, 2002; Thomas et al., 2005) and will go on to develop a subclinical infection with persistent HCV viremia. Cirrhosis develops in 5% to 25% of individuals with chronic HCV infection, and its development may take as long as 25 to 30 years (Thomas et al., 2005). Once cirrhosis occurs, the risk for hepatocellular carcinoma (HCC) is about 1% to 3% per year (Fattovich et al., 1997). An estimated 30% of individuals with HCV cirrhosis go on to develop hepatic decompensation within 10 years (Fattovich et al., 1997).

In the setting of chronic HCV infection, the rate of structural liver damage, also known as fibrosis, varies widely. A more rapid disease progression is observed among individuals with alcoholism, those infected with HIV or HBV, males, cannabis abusers, those who acquire the infection at an older age, and those with comorbid medical conditions (e.g., insulin resistance, hemochromatosis). Alcohol consumption is one of the most important risk factors promoting development of fibrosis and is believed to increase the incidence of cirrhosis in patients with HCV 15-fold (Safdar

& Schiff, 2004). Studies have indicated that daily cannabis use is associated with accelerated progression to cirrhosis in patients with chronic HCV infection. Possible mechanisms of action include overactivation of hepatic cannabinoid receptors, resulting in fatty liver changes and accelerated rates of fibrosis (Hezode et al., 2005).

Treatment for Chronic Infection

Medical practitioners working with patients with substance use disorders (SUDS) have been routinely screening and evaluating patients for HCV and recommending treatment. Pharmacotherapy for opioid dependence is no longer considered a contraindication for treatment of chronic hepatitis (Kresina et al., 2008).

There are two main goals of treatment:

1. Sustained virological response (SVR), which is defined as persistent absence of HCV RNA in the serum for more than 6 months after antiviral treatment
2. Prevention of progression to cirrhosis, HCC, and decompensated liver disease

Treatment is generally recommended for patients who meet the following criteria (SAMHSA, 2011):

- Elevated ALT
- Positive HCV antibody and HCV RNA
- Compensated liver disease (no hepatic encephalopathy, no ascites)
- Acceptable hematologic and biochemical indices
- Liver biopsy consistent with chronic hepatitis
- More than 18 year of age
- No contraindications for pegylated interferon (IFN)

The currently recommended treatment regimen of chronic HCV comprises two agents: pegylated IFN alfa, given weekly by intramuscular injections, and ribavirin, given daily by mouth. In May 2011, the U.S. Food and Drug Administration (FDA) approved two new oral protease inhibitors, boceprevir and telaprevir, that work in combination with the traditional treatments. The addition of protease inhibitors to the existing combination therapy has resulted in improved sustained virological response (SVR) rates. SVR differs by genotype, and accordingly, randomized controlled trials have determined optimal duration of treatment based on the viral genotype as shown in Table 10.1.

Genotype 1 was the dominant prevailing genotype, accounting for almost three-fourths of all chronic HCV infections. Almost all patients who are treated with IFN experience one or more adverse events during the course of treatment. Common adverse side effects of IFN include anemia, flu-like symptoms, gastrointestinal upset, neutropenia, thrombocytopenia, hair loss, ophthalmologic disorders, thyroiditis, glucose intolerance, migraines, and neuropsychiatric syndromes. In the registration trials of IFN and ribavirin, 10% to 14% of patients had to discontinue treatment early because of adverse side effects (Hadziyannis et al., 2004). The primary cause of treatment failure was due to neuropsychiatric side effects, which include depression, anxiety, cognitive side effects, and fatigue (Hoofnagle & Seeff, 2006).

Table 10.1 Standard Duration of Treatment Based on the Viral Genotype

HCV Genotype	Rate of Sustained Virological Response	Duration of Treatment
Type 1	47%	48+ weeks
Type 2 or 3	80%–86%	24+ weeks
Type 4	58%	48+ weeks

Barriers to Treatment

It has been estimated that one in six patients with HCV infection does not receive ongoing health care following the diagnosis of chronic hepatitis C (SAMHSA, 2011). Barriers to initiating IFN may include provider's inability to engage the patient into treatment, social instability, medical comorbidities, insufficient access to HCV specialists, and high cost of treatment (Hatem et al., 2005).

Many of the patients with HCV belong to a high-risk lifestyle group, which includes high rates of comorbid psychiatric illness, illicit drug use, intravenous drug use, and alcohol dependence (Dieperink et al., 2000). It has been argued that psychiatric disorders and SUDs would lead to nonadherence, ceasing treatment before completion, and poor viral response (Edlin et al., 2005). Physicians often withhold antiviral therapy until the patients have maintained abstinence from all substances and alcohol for a period of at least 6 months and have achieved 3 to 6 months of stabilized psychiatric symptoms.

To address this issue, many IFN treatment centers require patients to undergo a psychiatric assessment before initiating treatment. In addition to determining eligibility for treatment, clinicians can screen for active psychiatric symptoms and substance use, and accordingly implement early interventions or referrals to specialized treatment centers. With appropriate initiation of psychiatric or dual-diagnosis treatment, patients with psychiatric disorders and SUDs have been found to have adherence rates and SVR rates comparable to patients who do not use substances or have psychiatric comorbidities (Edlin et al., 2001). Moreover, substance users who are stabilized on opioid substitution therapy before starting IFN treatment can also successfully complete the IFN regimen with comparable SVR rates (Robaeys & Buntinx, 2005).

Human Immunodeficiency Virus

Typically, 12% (6676) of the estimated 56,300 new HIV infections each year have occurred in IDUs, who presumably were infected as a result of sharing equipment and needles (Hall et al., 2008). Another 4% of cases occur among men who have sex with men (MSM) and also inject drugs. A significant number of infections have occurred in the context of methamphetamine use, which is frequently associated with high-risk sexual behaviors (Ostrow et al., 2009). Furthermore, substance abuse and addiction are highly prevalent in HIV-infected populations, including those in whom transmission of HIV is primarily sexual. Noninjection drugs such as cocaine and alcohol are also associated with HIV risk through unsafe sexual behaviors as a result of intoxication and disinhibition. Rather than simple comorbid illnesses, HIV and SUDs are overlapping epidemics that act synergistically and contribute to adverse outcomes. Clinical consensus has established the importance of treating SUDs in order to produce optimal psychiatric and medical outcomes for patients with HIV infection (Lucas, 2011). The patients with the "triple diagnosis" are HIV positive, have an SUD, and have a co-occurring psychiatric disorder (Douaihy et al., 2003a). Women, racial and ethnic minorities, and socially and economically marginalized people are disproportionately affected by the triple diagnosis. These patients require integrated, interdisciplinary care to achieve an optimal outcome (Douaihy et al., 2003b).

Scope of the Problem

The relationship among SUDs, psychiatric disorders, and HIV disease is represented by data regarding HIV risk behaviors of individuals with psychiatric disorders and/or SUDs, HIV seroprevalence studies in psychiatric and/or substance use treatment settings, clinical samples of patients with HIV in various treatment settings, and cohort studies of psychopathology among homosexual or bisexual men and IDUs with HIV infection. HIV-positive survey respondents reported use of a wide range of current illicit drugs, with opioids featuring prominently. Fifteen percent of respondents reported using more than one drug class (Korthuis et al., 2008). Evidence that a co-occurring SUD and psychiatric disorder confer higher risk for HIV infection than either disorder alone is largely indirect. Psychiatric symptoms also increase HIV risk by producing impaired knowledge, judgment, and interpersonal skills regarding sexual and drug use behaviors (Douaihy et al., 2003a, 2003b). Impulsivity, hypersexuality, impaired judgment, reality testing, and cognitive impairment can be all associated with psychiatric disorders and SUDs and have the potential to increase the risk for contracting and transmitting HIV (Douaihy et al., 2003a, 2003b).

An estimated 21% of HIV-infected individuals in the United States are unaware of their status (Campsmith et al., 2009). In addition, people with SUDs who are HIV positive remain an active source of new cases through risky behaviors (Ostrow et al., 2009). Seeking out high-risk individuals requires significant outreach efforts. As a result, the CDC's recent Expanded Testing Initiative resulted in 2.8 million tests and 18,000 people in the United States newly diagnosed with HIV over a 3-year

period. The current goal is to reach populations very much affected by the epidemic: African Americans, Latinos, gay and bisexual men, and IDUs (Fenton et al., 2011). A recent study from the National Institute on Drug Abuse (NIDA Clinical Trials) demonstrated the value of onsite rapid HIV testing in drug abuse treatment programs in the United States. This multisite HIV Rapid Testing and Counseling Study showed that offering onsite rapid testing substantially increased testing rates and receipt of HIV test results. Onsite testing was found to be more effective than referrals for offsite testing—more than 80% of those tested on site received their test results, compared with only 18% who followed through when they were referred to another site for testing (Metsch et al., 2012). By offering rapid HIV testing to patients in substance abuse treatment programs, practitioners can help more individuals to become aware of their status and seek care and treatment, which helps to reduce the potential for transmitting the virus to others.

Medical Complications and Comorbidities

The course of HIV illness may be different for patients with SUDs compared with individuals without SUDs. Frequent alcohol intake, as well as the combination of frequent alcohol and crack cocaine, accelerates HIV disease progression (Baum et al., 2010). In addition, crack cocaine use facilitates HIV disease progression by reducing adherence in those on antiretroviral therapy (ART) (Baum et al., 2009). Medical complications in this population include a significant number of infections, including pneumonias, endocarditis, HCV, *Mycobacterium tuberculosis*, sexually transmitted infections, and neurosyphilis. HCV is increasingly significant as a comorbid condition. Approximately 25% to 33% of people infected with HIV are coinfected with HCV (Mathew & Dore, 2008). HCV affects the clinical outcome of patients with SUDs and HIV disease. HIV is a risk factor for accelerating the course of HCV, and HCV can worsen the outcome of HIV. When untreated, HCV infection progresses more quickly in people who are coinfected with HIV than in those who are infected with HCV alone (Mathew & Dore, 2008). Furthermore, comorbid HCV can increase the side effects of antiretroviral therapy and limits its tolerability.

Integrated Treatment

Patients with coexisting HIV and SUDs are less likely to receive ART, to have viral load testing, and to adhere to ART, and they are more likely to experience HIV-related symptoms, to have higher hospitalization rates, and to have decreased quality of life and die (Korthuis et al., 2008). The combined research findings from the past two decades affirm that drug abuse treatment is also HIV prevention. Despite evidence of the benefits of both HIV and substance abuse treatment—and evidence on the importance of combining both–barriers to their integration remain (Berg et al., 2011; Menza et al., 2010).

Among IDUs, ART has also been associated with dramatic reductions in HIV-related mortality. Initiating ART as soon as possible is warranted, particularly because most HIV-positive individuals with SUDs have a significant medical comorbid condition. Appropriate treatment of SUD and HIV requires a comprehensive assessment of the disorders, identification

of psychiatric and medical comorbidities, and collaboration with medical and social services. Effective treatments incorporate pharmacological interventions combined with psychosocial approaches and case management services. HIV prevention strategies should be integrated into treatment. An integrated, interdisciplinary treatment team approach is most effective; however, services do not necessarily need to be physically located in one program ("virtual integration") (Volkow & Montaner, 2011). An example of an integrated treatment model is the use of buprenorphine-naloxone treatment for HIV-positive opioid-dependent individuals. Integrated buprenorphine-naloxone and HIV treatment was successfully introduced to community- and hospital-based clinics under the direction of infectious disease, psychiatry, and general internal medicine physicians. Potential benefits of integrating buprenorphine-naloxone into HIV care include simultaneous treatment of medical and substance use comorbidities; normalization of patient social functioning; removal of abstinent patients from settings that may trigger relapse; better adherence to drug treatment and/or HIV clinical care, including ART; lower probability of HIV disease progression; and fewer hospitalizations and drug-related medical problems (e.g., infections). Ongoing challenges included polysubstance use and mental health issues among patients; limited adoption of buprenorphine-naloxone treatment among colleagues; and the necessity of incorporating new procedures, including urine toxicology testing, into established practice (Weiss et al., 2011).

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Chapter 11

Co-occurring Disorders

Dennis C. Daley and Antoine Douaihy

Key Points

- Patients in mental health and addiction treatment systems show high rates of co-occurring disorders (CODs)—psychiatric disorder (PD) and substance use disorder (SUD) combined.
- Patients with CODs have higher rates of medical, social, and family problems, relapse, suicidality, and hospitalization compared with those with a single disorder.
- The co-occurrence of these disorders compromises treatment response compared with either disorder alone.
- There are many relationships between these types of disorders. Having one type increases the odds of having the other type of disorder.
- A thorough assessment reviews multiple dimensions of the substance use and psychiatric history. This is used to develop treatment goals and identify services needed to help patients with CODs.
- Integrated treatment refers to a treatment approach that focuses on both types of disorders concurrently. A range of psychosocial, pharmacological, and ancillary services (case management, housing resources, assertive outreach, and vocational rehabilitation) is often needed.
- Medications for either type of disorder can be effective and integrated into the treatment plan for CODs. This includes psychiatric medications for acute symptoms and maintenance treatment and medications for detoxification from addictive substances, to reduce alcohol or drug cravings, and as replacement medications for tobacco or opioid dependence.
- Families and significant others are affected by CODs. Their involvement in treatment can help the patients as well as family members. In some cases, family members need help for their own SUD or PD.
- An important part of treatment is promoting recovery and facilitating the patient's involvement in mutual support programs for addiction, psychiatric illness, or both. Families may also benefit from mutual support programs.
- Relapse and recurrence are common among patients with CODs. Learning about early warning signs of relapse, identifying high-risk relapse situations and coping strategies to manage them, and helping patients, concerned significant others, and families prepare to intervene early in an actual lapse/relapse may facilitate positive outcomes.

Overview

This chapter provides an overview of dual disorders or co-occurring disorders (CODs), which refers to having both a substance use disorder (SUD) and a psychiatric disorder (PD). We review prevalence and effects of CODs, identify subgroups of patients with CODs, and discuss the relationships between the SUDs and PDs. We then discuss assessment and treatment of CODs, with a focus on some of the key issues or challenges for professionals providing care to patients with CODs. This review integrates literature from studies of evidenced-based interventions and writings describing clinical interventions and recovery strategies. We end this chapter with two brief case histories, each followed by several questions for you to address in regard to the management of the case.

Prevalence and Consequences of Co-occurring Disorders

Epidemiologic studies among community samples and clinical studies show high rates of CODs among patients treated in psychiatric and addiction treatment systems (Daley & Thase, 2004; Kelly et al., 2012; Nunes et al., 2010). Rates of CODs are especially high among patients with antisocial personality disorders (84%), borderline personality disorder (67%), bipolar disorder (61%), and schizophrenia (nearly 50%). Many patients have multiple *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) Axis I and Axis II diagnoses. Rates of lifetime PDs are highest among patients with polysubstance dependence (about 80%) or drug abuse/dependence (>50%), although these rates are also high among patients with alcohol abuse or dependence (nearly 40%). In addiction treatment programs, nearly half will meet lifetime criteria for another PD (Grant et al., 2004; Ouimette et al., 1999). Similar high rates of SUD comorbidity will be found in psychiatric settings among patients with more severe types of disorders such as schizophrenia or bipolar illness (Blanchard, 2000; Swartz et al., 2006).

Patients with CODs have higher rates of medical, social, and family problems and are more prone to relapse of either or both disorders and rehospitalization (Mueser et al., 2003). In addition, these disorders create a burden for families and significant others who are affected by certain behaviors associated with SUDs or PDs. Clearly patients with CODs present many challenges to clinicians and caregivers who provide services.

Make sure all patients in treatment for a PD are screened and/or evaluated for an SUD, and that all patients in treatment for an SUD are screened and/or evaluated for a PD. Patients with CODs in ongoing care should be monitored to determine whether psychiatric or addiction symptoms are present and complicating treatment or recovery of the patient. For example, excessive alcohol use can complicate recovery from a mood disorder. Or, using cocaine or marijuana can complicate recovery from a psychotic or borderline personality disorder.

The issue of "which disorder comes first" is often raised—does substance use or an SUD cause a PD? Does the PD cause the patient to use substances or develop an SUD? Do both disorders result from other factors? The two disorders could be independent of each other, or one may be the primary disorder and the other one secondary. For example, alcoholism can develop long after a patient has experienced clinical depression. Or, a patient with drug dependence can develop a psychotic disorder after the addiction has been present for some time. It is sometimes difficult to tell which disorder came first, so you may think of some patients with CODs as having co-primary SUDs and PDs.

Subtypes of Co-occurring Disorders

Patients with CODs show varying degrees of illness and functioning. A specific patient may show high, medium, or low psychiatric severity, or high, medium, or low substance use severity (SAMHSA, 2005). Patients with high levels of both types of disorders are more likely than others to experience complications in their recovery because each disorder can adversely affect the other.

Interventions depend on the severity of the CODs as well as the impact on the functioning of the patients. For example, an unemployed patient with alcohol dependence, cannabis dependence, and cocaine abuse with a chronic PD such as recurrent major depression will need a different treatment plan than an employed patient with a single episode of major depression evaluated to be moderate who has coexisting alcohol abuse.

You can intervene by determining the most appropriate treatments needed, then providing psychiatric and medical management as well as consultation and/or supervision to clinical staff that provide individual, group, or family therapies. The team approach to care is especially important for CODs given the complexity of many cases and the many diagnoses and problems that patients have.

Theories of Co-occurring Disorders

Although numerous theories explain comorbidity between PDs and SUDs, no single theory has overwhelming support. Some of these theories include secondary psychopathology models explaining the increase in comorbidity to the effects of substances causing PDs in vulnerable individuals. Secondary addiction models explain the increased comorbidity as related to PDs causing SUDs in vulnerable individuals. Common factor models and bidirectional models involve one or more independent factors that increase the risk for either disorder (Mueser et al., 2006).

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Relationships Between Substance Use Disorders and Psychiatric Disorders

Following is a summary of potential relationship between SUD and PD symptoms and disorders (Daley & Thase, 2004).

- Patients with an Axis I and/or Axis II PD are at increased risk for an SUD. For example, compared with a person without a PD, an individual with a PD is almost three times more likely to have an SUD according to the National Institute of Health's Epidemiologic Catchment Area (ECA) survey.
- Patients with an Axis I SUD are at increased risk for psychiatric illness. The ECA survey also found that drug abusers are 4.5 times more likely to have a lifetime psychiatric diagnosis compared with non–drug abusers.
- Patients with PDs are more vulnerable than others to the adverse effects of alcohol or other drugs. Even a small amount of marijuana can contribute to a psychotic episode.
- The use of drugs can precipitate an underlying psychiatric condition. For example, Bath Salts, PCP, or cocaine use may trigger psychotic symptoms, suicidality, or disturbances in mood or behavior.
- A PD can affect the course of an SUD in terms of how quickly it develops, how a patient responds to treatment, relapse, and long-term outcome. For example, patients with chronic mental disorders often have a more complicated course of recovery than those with single episodes of a disorder who do not experience persistent or chronic symptoms.
- Substances or intoxication can cause specific psychiatric symptoms. For example, patients addicted to alcohol or sedatives can appear clinically depressed. A patient can feel suicidal after an episode of cocaine use. Or, a patient using hallucinogens can experience a psychotic episode triggered by the effects of this drug.
- Psychiatric symptoms can result from chronic use of substances or in response to having an addiction. For example, anxiety and depression are common when an addicted patient first stops using substances. Depression may also result from a relapse of an addiction after a period of sobriety or from becoming aware of losses associated with addiction (loss of job, relationships, financial stability, or health).
- Substance-using behavior and psychiatric symptoms may become linked over the course of time, making it difficult to know which came first. In these cases, you can think of a patient having "co-primary disorders" because they are so intertwined and it is difficult to determine which affects the other.
- These disorders can develop at different points in time. For example, a patient with bipolar illness may become addicted to alcohol or drugs years after being stable from a mood episode. Or, a patient with

alcohol dependence can develop a panic disorder or major depression after a period of sobriety.

- Symptoms of a PD can contribute to relapse of an SUD, and substance use can contribute to a relapse of a PD. For example, an increase in anxiety or hallucinations may influence a patient with schizophrenia to use alcohol or another drug use to manage psychotic symptoms. Or, a cocaine or alcohol binge may lead to depressive symptoms or suicidality.

Components of the Assessment

The initial assessment involves a combination of the following: psychiatric evaluation, mental status examination, substance use history, physical examination, laboratory work, urine drug testing, history of prior treatments for either disorder, screening for infectious diseases, and family and social history. Patient and collateral interviews and review of previous records should be a part of the assessment process.

Longitudinal and repeated assessments involve monitoring psychiatric symptoms and substance use. Discussions with family or other behavioral or medical service providers, completion of rating scales, blood work (for patients on certain medications), urine drug testing, and breathalyzer tests can be used to continuously assess the patient. A major challenge is sorting out the effects of substance use and withdrawal from those of CODs (McKetin et al., 2010). This requires skills in differential diagnosis formulation and sometimes using provisional diagnoses. The path of assessment, diagnosis, and treatment of CODs is not a conventional one, and reassessments throughout treatment are often needed to reach an accurate diagnosis (Weiss, 2008).

Assessment should also address the patient's strengths and resiliencies. All patients have personal strengths that can aid them in recovery. Many are resilient and have bounced back from relapses or major life problems.

American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders Classification

A comprehensive assessment reviews information on all areas of functioning of the patient: reason for seeking help and current stressors; current and past psychiatric symptoms (including suicidality and homicidality); current and past substance use; history of treatment and relapse; medical, family, social, developmental, academic, occupational, legal, and spiritual history; and mental status examination.

The substance use history includes a detailed review of current and past substances used (frequency, quantity, methods of use) and effects of such use on psychiatric symptoms. It reviews DSM-IV-TR symptoms of SUDs such as loss of control; inability to abstain despite repeated attempts; obsession or preoccupation with using, getting, or recovering from the effects of substances; significant increase or decrease in tolerance; withdrawal symptoms or using to avoid these symptoms; continued substance use despite problems; and impairment caused by substance use.

Clinical diagnoses are formulated based on criteria set forth by the DSM-IV-TR. The DSM-IV-TR provides a comprehensive approach to assessment of the patient, which is recorded on five axes.

American Society on Addiction Medicine Framework

Clinical interviews can review the American Society of Addition Medicine (ASAM) criteria below and may use the Addiction Severity Index or other interview formats, as well as pen-and-pencil questionnaires such as the Michigan Alcoholism Screen Test (MAST), the Drug Abuse Screening Test (DAST), or the Dartmouth Assessment of Lifestyle Inventory (DALI), which is one of the only questionnaires designed for patients with CODs (note: the DALI mainly addresses alcohol and marijuana use).

Breathalyzers, urine and blood tests, liver function studies and a physical examination can also aid the assessment process.

ASAM delineates the following six dimensions of functioning to assess the level of care needed for the patient:

- *Acute intoxication and withdrawal potential.* Determine whether the patient needs medical detoxification before initiating another type of treatment. An important issue is insuring that the patient is linked into continued treatment and/or mutual support programs following detoxification.
- *Biomedical conditions and complications.* Determine the level of medical management required for the patient with acute or chronic medical problems. Many psychiatric and addictive disorders are associated with an increase in risk for medical disorders that require medical management.
- *Emotional, behavioral, or cognitive conditions and complications.* Determine whether the patient has a co-occurring psychiatric illness or other significant symptoms requiring treatment, and whether treatment in a mental health system is needed for recurrent or persistent forms of mental disorders.
- *Readiness to change.* Determine the patient's level of motivation to change and the degree to which treatment recommendations are accepted or resisted. Does the patient accept the PD? The SUD? Treatment recommendations?
- *Relapse, continued use, or continued problem potential.* Determine whether the patient is aware of relapse triggers and has a plan, or needs to stabilize from a recent relapse. This dimension also aims to assess whether the patient is suicidal or has psychiatric problems that may impede his or her ability to engage in treatment.
- *Recovery and living environment.* Determine whether other people, school, work, child care, or transportation problems are a barrier to the patient's ability to engage in treatment. Assess the degree to which the patient has a support system that can aid recovery.

The assessment findings are used to recommend a level of care: outpatient, intensive outpatient, partial hospital, medically monitored inpatient detoxification, short-term residential, long-term residential, or medically managed inpatient detoxification or residential care. Patients may be referred to a dual diagnosis (COD) "capable" or "enhanced" program. Dual diagnosis *capable* programs are offered in an addiction treatment system to treat less severely psychiatrically ill patients. They focus primarily on treatment of the SUD among patients whose PDs are stable. Dual diagnosis *enhanced* programs are likely to be part of a mental health system of care. These programs care for patients with more unstable or disabling PDs such as chronic or recurrent disorders in addition to the SUD.

Integrated Treatment for Co-occurring Disorders

Integrated treatment focuses on both types of disorders and should be used when treating a patient with CODs (Horsfall, 2009; Weiss & Connery, 2011). Parallel or sequential treatment approaches proved ineffective (Mueser et al., 2003). Although the patient may use a specific form of treatment at times (i.e., an addiction rehabilitation program to initiate abstinence and set the foundation of recovery; a brief psychiatric hospital stay to stabilize severe psychotic or mood symptoms), integrated treatment focuses on both psychiatric and substance use issues. This dual focus reduces the chances that an untreated disorder will increase vulnerability to relapse of another disorder. And, when the same team provides integrated care, the rates of retention in treatment increase as well as positive outcomes, such as rates of 6-month periods of remission, increases in work and social contacts, independent living, life satisfaction, and decreases in hospitalization and incarcerations (Xie et al., 2010).

Evidence suggests that patients receiving integrated treatment have higher rates of treatment adherence and improved clinical outcomes compared with those receiving parallel or sequential treatment, particularly patients with more persistent and chronic forms of mental illness. However, it is not uncommon in some instances for patients treated in a mental health setting to receive care that has little focus on the substance use component of the CODs.

Psychosocial Treatments

Many effective treatments exist for SUDs, PDs, and CODs. Some integrated approaches help patients with any combination of disorders, whereas others are geared toward specific types of psychiatric illness (e.g., bipolar disorder, post-traumatic stress disorder, schizophrenia). Although goals depend on the specific patient and the diagnoses, following is a list of potential goals of psychosocial treatments:

- Achievement and maintenance of abstinence from alcohol or other drugs of abuse: for patients unable or unwilling to work toward total abstinence, a reduction of the amount and frequency of substance use and/or the concomitant biopsychosocial sequelae associated with their SUD
- Stabilization from acute psychiatric symptoms
- Resolution or reduction of psychiatric symptoms and problems, especially for patients with more chronic or recurrent types of PDs
- Learning to manage persistent symptoms of chronic psychiatric illness
- Improved cognitive, behavioral, and interpersonal coping skills
- Improvement in functioning: physical, emotional, social, family, interpersonal, occupational, academic, spiritual, financial, and legal
- Positive lifestyle change and improvement in the quality of life
- Early intervention in the process of relapse of either the SUD or PD

Role of Medications in Treating Co-occurring Disorders

Combined behavioral and psychopharmacological treatments are needed for many patients with CODs for optimal outcome. When selecting and using pharmacotherapy for co-occurring SUD and PD, clinicians should consider the following: unwanted synergy between prescribed medications and abused substance (e.g., benzodiazepines and alcohol); drug–drug interactions affecting the efficacy of psychiatric treatment; nonadherence due to intoxication, withdrawal states, or other reasons; drug-seeking behavior; intentional or unintentional overdose; and the abuse potential of medications (Brady, 2008).

Psychiatric Disorders

Data from controlled trials that inform pharmacological treatment of co-occurring mood disorders and SUDs have been relatively scarce. The results from these trials of antidepressants, such as tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs), showed a modest beneficial effect of antidepressants on depressive symptoms (Nunes & Levin, 2004). Importantly, there was no direct impact of antidepressant treatment on alcohol consumption, but in those studies in which the medication had a positive effect on the treatment of depression, a significant reduction in alcohol use also occurred (Nunes & Levin, 2004). Overall, the current recommendation is that alcohol and drug abuse not be considered a barrier to the treatment of depression. Few controlled trials have investigated treatment for co-occurring SUDs and anxiety disorders. Because there are limited data, the best approach may be to treat with medications known to be effective for the specific anxiety disorder while being mindful of contraindications to the use of these agents in individuals with alcohol dependence.

Treatment considerations for individuals with alcohol and drug dependence and concurrent mood and/or anxiety disorders should include safety, toxicity, and abuse liability. Low adherence to medications is a frequent cause of recurrence of major PDs and is also a problem in addiction treatment.

Some studies suggest that some second-generation antipsychotics may be effective for comorbid SUD in schizophrenia, particularly clozapine and nicotine dependence. Most important is providing integrated treatment using behavioral and pharmacological interventions for co-occurring SUD and schizophrenia because lack of adequate treatment of one of the disorders interferes with recovery (Volkow, 2009).

Medication Adherence

In addition to discussion with patients the purposes of medications you prescribe, address past adherence problems or potential adherence problems. This can prepare the patient to take action before a decision is made to reduce or stop medications without consulting you or another caregiver. Following are factors that could contribute to poor adherence medications that you may review with patients:

- Uncomfortable side effects
- Unrealistic expectations of the purpose and efficacy of medicine

- Lack of adequate response to treatment
- Complicated medication regimens
- Negative interactions with alcohol or illicit drugs
- Low motivation to change
- Negative attitudes of patients regarding treatment
- Severity of illness
- Poor judgment
- In the case of substance abuse, the desire to use substances again

Poor medication adherence increases the risk for relapse of the SUD, PD, or both, and may contribute to rehospitalization. Among patients with CODs, poor adherence to the medication regimen is associated with resumption of substance use as well as other problems in functioning. Numerous studies of psychiatric rehospitalization show that patients who are readmitted, including high utilizers with multiple admissions, are significantly more likely to be noncompliant with psychotropic medications and significantly more likely to abuse alcohol or drugs. Thus, medication adherence is an important area in clinical care because research evidence shows a strong association between poor adherence and negative clinical outcome. Patients who are poorly compliant with medications are often poorly compliant with outpatient treatment sessions.

Strategies to Help Patients with Co-Occurring Disorders

You can help patients with CODs in your direct work with patients, or in your collaboration with clinicians who provide individual, group, or family therapies; case management; or other ancillary services. Specific ways to help include the following:

- *Convey helpful attitudes.* We have consulted with numerous professionals about their frustration and negative attitudes in dealing with psychiatrically ill patients who have SUDs. Anger, frustration, and judgmentalism are common. Such negative reactions and feelings must be contained. To be effective you must understand and accept patients with CODs as being ill, and covey genuine concern and empathy in your interactions.
- *Understand illness from the "inside out."* Try to understand what it is like to be dependent on substances, or to want to use alcohol or drugs so badly that you are willing to risk losing your family, job, or health. Think about what it feels like to have a PD and how this affects your self-image, ability to function, or your vision of the future. What if you were a highly successful professional, then deteriorated and lost your job because of a manic episode? What would this feel like and how would this affect your life?
- *Educate the patient.* Provide information about the disorders (symptoms, etiology, effects, how each disorder affects the other), treatment options, and recovery. Encourage patients to raise questions to you during their doctor visits.
- *Motivate the patient.* Many disorders lower the patients' motivation to change or affect their judgment, which may lead to patients being unaware of their disorder. Use motivational strategies to help patients engage and remain in treatment and strengthen motivation for change.

- *If possible, include the patient's family and/or significant other.* Families and children are often emotionally hurt by CODs. Helping the patient examine the impact of the disorders on the family, eliciting support from the family, and providing or facilitating education, support, and therapy to the family are some of the ways in which families can be helped. There will be cases in which individual family members may need help for a psychiatric illness, an addiction, or both. You (and your team) can help by providing or facilitating an assessment for the family member in need.
- *Provide integrated assessment and treatment services.* As stated before, integrated treatment services focus on both substance use and psychiatric issues, acknowledging that each affects the other. Psychosocial, medication, or combined treatments are needed by many patients with CODs.
- *Integrate evidenced-based interventions into clinical care.* Many studies show the efficacy of various treatments for psychiatric illness, addiction, or CODs. In your role as a physician, you can help clinicians become familiar with and integrate these interventions into their work with patients.
- *Facilitate linkages between levels of care.* Patients who fail to engage in the next level of care following completion of another level are at risk for relapse. For example, psychiatric inpatients who enter ambulatory care and adhere to an adequate dose of treatment are less likely to be rehospitalized than those who fail to continue care after hospital discharge. Patients readmitted to a detox unit, inpatient psychiatric unit, residential program, or day program should be prepared for the next level of care. You (and your team) can use motivational strategies, case managers, or other strategies to increase the likelihood that these patients will continue their treatment.
- *Focus on adherence issues.* Patients benefit from treatment to the extent that they remain in it for a sufficient period of time. No short-term treatments exist for CODs, particularly for patients who have more serious and persistent forms of mental illness. There are many systems and clinical-related strategies that improve adherence. You (and your team) can routinely discuss adherence problems and issues with patients (e.g., reasons for failure to show for sessions or take medications as prescribed). Barriers to adherence can be identified, and strategies to work through these can be discussed. Try to help patients learn from their past mistakes such as poor adherence to treatment.
- *Promote recovery from CODs.* Educate your patients about mutual support programs and ensure that they are linked with specific programs when appropriate. Mutual support programs recommended may include Alcoholics Anonymous (AA), Narcotics Anonymous (NA), Cocaine Anonymous (CA), and other addiction support groups, such as Rational Recovery, SMART Recovery, Women for Sobriety, Dual Recovery Anonymous, Double Trouble, and other dual recovery support groups along with mental health support groups. Sponsorship, literature, slogans, and recovery clubs are helpful in recovery. Do

not assume that a patient cannot recover without involvement in a 12-step group or that failure to attend 12-step programs is a sign of "resistance." Patients may use "tools" of programs even if programs are not attended. However, we strongly encourage all patients to be educated about mutual support programs and encouraged to attend.

- *Focus on relapse issues.* Many patients with psychiatric and addictive disorders relapse of either or both disorder. As discussed in the chapter on relapse in this book, helpful interventions include identifying and managing warning sign of relapse; identifying and managing high-risk factors; developing a recovery support system; and being prepared to take action if a relapse of either disorder occurs.

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Effects of Co-occurring Disorders on the Family

The family unit and individual family members and significant others are affected by CODs. The family system is often disrupted, and communication, interactions, emotional health, and financial condition of the family can be harmed. With good intentions, the family may show "enabling" behaviors that help perpetuate the patient's problems. Enabling may be "passive" when the family does nothing and accepts problematic behaviors related to the substance use or PD of the ill member. Or, enabling may be "active" when the family covers up problems caused by this member. Sometimes, this involves bailing the ill member out of legal, financial, or other types of trouble, or assuming her responsibilities.

CODs can take an emotional toll on parents, spouses, children, siblings, and other relatives. Stress can be high as a result of exposure to psychiatric symptoms or intoxicated, violent, erratic, or unpredictable behaviors. Family members may feel upset, angry, confused, anxious, worried, or depressed. Some family members, especially parents, feel guilty and responsible for causing the ill member's problems.

Children are affected by CODs and may have emotional, behavioral, academic, or substance abuse problems as a direct or indirect result of exposure to a parent's disorders. They can benefit from education, support, and having an opportunity to share their worries, feelings, and concerns. Children with serious problems need treatment.

Benefits of Family Involvement

Family participation is beneficial in many ways. Involving the family can help you and the treatment team gather more information about the family's experience with the patient. You will also get a sense of the strengths (and deficits) of the family members, which will enable you to assess how they relate to the member with COD and their ability to support recovery. Family sessions also provide clinical staff with a perspective on how the family communicates and gets along. They often benefit from information, support, and help dealing with their own feelings and reactions to the member with the COD. Also, you or the treatment team may determine whether a specific family member may need an evaluation for a PD or SUD. Although it is not the role of a physician to be a family therapist, even brief interactions with the family can help with assessment and treatment. This can also be beneficial to the family.

Typical Concerns of Family Members

Awareness of questions and concerns of family members can aid the counselor in working with the family. These questions and concerns often include the following (Daley & Thase, 2004):

- Specific DSM diagnoses and the implications of these for the patient.
- Causes of CODs and how SUDs and PDs interact and affect one another
- Types of treatment available for CODs (psychosocial treatment and programs, medications, and other), length of treatment, expected outcome, and cost

- Medications for either disorder, side effects, and interactions with alcohol, street drugs, or nonprescribed drugs
- The role of the family in supporting the ill member's recovery
- How treatment can help the family deal with their needs, problems, and concerns
- How the family can deal with some of the complications of CODS such as violence or the threat of it, suicidal action or the threat of it, more severe symptoms of the disorders, or relapse
- Whether other family members are vulnerable to psychiatric illness, substance abuse, or both, especially offspring
- Whether the ill family member will be able to function at a job, school, or home
- How to deal with emotional reactions toward the member with the CODs (e.g., anger, disappointment, worry, guilt)
- When detoxification or psychiatric hospitalization are needed

Types of Family Treatment

There are a variety of family treatments that can be used, depending on the patient's situation and the availability of services in a program. Unfortunately, family services are often lacking in many treatment programs. Family services may include the following:

- Psychoeducational programs that provide information on CODs and recovery and on ways the family can cope with their concerns regarding the ill family member. These are offered to several families and can be held regularly, such as once a week, or on a periodic basis, such as monthly or bimonthly. Psychoeducational programs can last several hours, a half-day, or a full day.
- Family therapy in which issues and problems within a specific family are explored from a family systems perspective
- Couples therapy in which specific problems of an adult couple are explored
- Multiple family groups that combine PE, support, and discussion of mutual problems and concerns of families
- Exposure to family support groups for addiction such as Al-Anon, Nar-Anon, Alateen, Alatots, Parents Groups, or Co-Dependency Anonymous
- Exposure to family support groups for mental illness such as National Alliance of the Mentally Ill (NAMI) groups

Some patients are disengaged from their families and have no one whom they can involve in treatment. Families may refuse to get involved in treatment, especially those who feel tired or burned out. Family members with serious illnesses themselves (PD or SUD) may be unable or refuse to engage in treatment.

Family resistance to treatment or patient resistance to family involvement in treatment should not be taken at face value. There are effective strategies for engaging the family in treatment. Patience, persistence, and creativity are often needed on the part of the clinician.

Principles and Strategies for Helping Families

As we stated earlier, you do not have to be a family therapist to help a family. The following principles and strategies may help guide your interactions with families:

- Do not label the family as "sick, dysfunctional, or codependent." View them as allies in the treatment process who may have their own issues or needs.
- Talk with your patients about the impact of CODs on the family and the importance of their involvement in their care (when appropriate).
- Have members of the treatment team establish contact with the family as early as possible in the assessment and treatment processes.
- View the engagement process as important. If a family cannot be engaged in treatment, the best treatment available will not benefit them.
- Be patient and flexible with families. Encourage staff to use outreach phone calls and ask families for help in working with the patient. Do not rely on the patient to invite the family to sessions because the patient may sabotage the chances of the family showing up.
- Ensure that you, your program, and/or program staff are accessible to families. Offer evening appointments if convenient. Family groups can be held on weekends. Be available by telephone as needed.
- Focus on family strengths. Do not emphasize family deficits or problems at the expense of overlooking their strengths.
- Provide a framework for the family to understand what is happening to the patient and family system. Educating the family about SUDs and PDs, the course of illness, and recovery is an excellent way to provide this framework. Use the no-fault, biopsychosocial model of illness.
- Connect emotionally with the family by letting them know you understand their feelings, concerns, and worries. Give them an opportunity to express their feelings. This will make it easier to help them explore how to cope with these feelings and adapt to the ill member's recovery.
- Provide hope by discussing how treatment for CODs benefits patients and their families.
- Provide a realistic view of treatment and recovery. Prepare the family for the possibility of setbacks and relapses. If relevant, discuss issues around involuntary commitment in cases when the ill member is at risk for suicide or homicide, or if functioning has decompensated severely and the patient is unable to take care of basic needs.
- You or clinical staff can link the family with family support groups in the community or other resources that may help them or the member with the CODs (e.g., social services agencies, housing agencies).
- If the patient has children, educate the family about the impact of CODs on their children. Encourage the parents to talk with their children about the disorders and how they have experienced these. Parents can elicit thoughts, feelings, and questions from their children. If a child is abusing substances or appears to have a serious mental health problem, help the parents arrange for an evaluation of this child.

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Promoting Recovery

Recovery is the process of managing the CODs over time. It involves making changes in self and/or lifestyle in order to improve functioning and the quality of life. Recovery is facilitated by the use of mutual support programs such as AA, NA, Dual Recovery Anonymous (DRA), and other mental health programs. You can educate patients and families about recovery, promote engagement in mutual support programs, and encourage other clinical staff to do this as well.

Continuing Care

Continuing care helps the patient maintain gains made during inpatient care, prevent relapse of substance abuse or a recurrence of psychiatric illness, or intervene early in the relapse process. Participation is associated with better alcohol and drug use outcomes, improved psychiatric outcomes, improvement in functioning, lower relapse rates, and lower readmission rates. Despite the importance of and positive outcome associated with adherence to continuing care, numerous studies report serious problems in entering aftercare following completion of inpatient care. Poor adherence to aftercare is common across a range of SUDs and CODs and contributes to clinical deterioration, which causes or exacerbates medical or psychosocial problems and contributes to the need for hospitalization.

Preparing Inpatients for Continuing Care

Preparing inpatients with CODs for continuing care before hospital discharge increases entry rates in ambulatory programs. We found that a brief, motivational therapy session provided by an outpatient clinician before hospital discharge almost doubled the initial aftercare entry rates. Another group of researchers also found that a single motivational session provided to inpatients before discharge more than doubled aftercare entry rates. You can talk with patients about the importance of follow-up care and work with other clinical staff to address past problems with adherence. Motivational strategies often improve adherence rates.

Relapse Prevention

Relapse prevention (RP) was initially developed for alcohol and drug addictions, then expanded for use with other addictive or compulsive disorders, PDs, and CODs as researchers and clinicians recognized that relapse (or recurrence) was a significant issue facing patients with any type of SUD or PD. Most evidenced-based practices incorporate RP strategies. The overall goal is to help patients learn specific skills that they can use to manage their illnesses or disorders and to improve the quality of their lives. These skills include, but are not limited to, the following (for more extensive reviews of RP, see Daley, 2003; Daley & Douaihy, 2010;

Fox et al., 2010; Gingerich & Mueser, 2011; Kupfer et al., 1992; Marlatt & Donovan, 2005; Marlatt & Gordon, 1985):

- Monitoring and coping with psychiatric symptoms (e.g., mood, anxiety, psychotic, behavioral, other) or symptoms of their addiction (e.g., substance cravings or social pressures to use substances)
- Following a plan of change in which symptoms and behaviors are monitored, structure is implemented in daily life, and goals are identified and pursued (with steps to achieve these goals)
- Identifying and developing strategies to manage personal high-risk factors that could affect relapse or recurrence (e.g., symptoms of an illness, feelings or emotions, thinking, relationships, support systems)
- Identifying and developing strategies to manage early signs of relapse of the SUD or PD (e.g., changes in attitudes, behaviors and feelings, or emotions). Some warning signs are common across many disorders such as reducing or stopping treatment sessions, attendance at mutual support programs, or medications. Other signs are unique to the individual patient and based on the patient's specific disorders and coping skills.
- Using a support network to aid ongoing recovery. This may include peers in recovery, mutual support programs, other community resources and others whom the patient trusts and feels supported by. Some patients need help learning to reach out for help and support from others.
- Making lifestyle changes that improve the quality of life. Such changes may reduce the need for a patient to use substances. Patients with meaningful relationships and activities and important connections with others may feel less vulnerable to negative feelings or moods that can contribute to relapse.
- Having a plan to intervene if there is a setback, regardless of whether the setback is minor or major. If the setback is a major one leading to psychiatric hospitalization or detoxification in a hospital, you can help the patient learn from the recent relapse.

Case Vignettes

Following are two brief cases with some questions to think about regarding your potential role in treatment. After reading each case, think about how you would answer the questions that follow.

Case Vignette 1

Michael is a 34-year-old married, employed father of two children, ages 13 and 9 years, who was involuntarily committed to a psychiatric hospital following a manic episode in which he became irrational and threatened to kick his wife and children out of their home, insisted he was going to take over a business in another state, and quit going to work. He started drinking after 2 years of sobriety, and was arrested for trying to solicit teenagers to have sex with him. The police initiated an involuntary commitment when it was clear that Michael was out of touch with reality and a threat to others. After his mood and behavior stabilized during his hospitalization, Michael realized the seriousness of his condition and the impact on his behavior and agreed to continue outpatient treatment. He recognized that his bipolar illness contributed to an alcohol relapse and agreed that he needed to abstain from alcohol. During inpatient treatment, he and his wife attended several multi-family group sessions to gain information about dual disorders and the impact on families and to discuss recovery strategies. He also had sessions with his wife and children with his doctor and social worker to discuss the impact of his behaviors on his wife and kids, their feelings and reactions, and ongoing recovery strategies for Michael and his family. His wife was encouraged to resume Al-Anon participation because this had been helpful to her in the past. Michael and his family were also advised to attend some of his follow-up outpatient sessions together.

- What do you think the goals of an inpatient hospitalization would be for Michael or someone like him who has both a psychiatric and addiction relapse?
- How would you help Michael and his family learn from his relapse of both of his disorders? How would you address relapse of each disorder?
- How could you and your team help Michael's wife and children in a case like this, which led to a psychiatric hospitalization?
- Which types of mutual support programs might be of help to Michael or his family?

Answers to Case Vignette 1

What do you think the goals of an inpatient hospitalization would be for Michael or someone like him who has both a psychiatric and addiction relapse?

The main goals are to stabilize his psychiatric illness through the use of appropriate medication regimen (in Michael's case, a mood stabilizer) and supportive and psychoeducational approaches and also to address his drinking through detoxification treatment. After he is stable psychiatrically and medically, the goals would be to help Michael start working on dual recovery that incorporates adherence to medication, staying sober, and getting involved in treatment, including therapy and mutual support programs.

How would you help Michael and his family learn from his relapse of both of his disorders? How would you address relapse of each disorder? What would you want Michael and his family to learn from his relapse?
Through engagement in treatment focusing on dual recovery and the integration of treatment of both conditions, psychoeducational approaches focus on helping Michael and his family better understand how the co-occurrence of his bipolar disorder and alcohol abuse worsens the course of both illnesses and compromises treatment response compared with either disorder alone. Michael needs to be involved in a dual recovery treatment program to work on preventing relapse of both disorders and empowering him within a broad perspective by helping him self-manage his symptoms. Involvement of his family members in his treatment sessions can help them better understand early warning signs of relapse, such as not taking his medications; not attending his therapy sessions; changes in his behaviors and attitudes; difficulty coping with stressful situations, conflicts, and negative emotional states; and fluctuations of his motivation for change and treatment.

How could you and your team help Michael's wife and children in a case like this, which led to a psychiatric hospitalization?
Educating and involving the family in his care is very important as a way to promote understanding of the symptoms and effects of his PD (bipolar disorder), drinking problem, and the medications used in his treatment. Involvement of the family can help them to cope better with his illness.

Which types of mutual support programs might be of help to Michael or his family?
Involvement in DRA or Double Trouble in Recovery (DTR), designed for people with CODs, can help with greater acceptance and understanding than may be encountered in traditional 12-step programs. Participation in these groups can help promote recovery through medication adherence, sobriety, and better quality of life. Involvement of his family in Al-Anon and other organizations such as NAMI can help by providing support and resources in the community.

Case Vignette 2

John is a 28-year-old employed, married man with a history of problems with alcohol and drugs, and with depression beginning during his adolescence. His alcohol and drug use worsened considerably last year, so he entered a rehabilitation program, attended outpatient therapy for 6 months, and joined AA following completion of the residential program. After being sober for more than a year, John became depressed and sought outpatient help because he was worried about relapsing to alcohol use. He benefited from an 8-month trial of medications but is now medication free. He initially attended therapy sessions weekly but

now comes once each month. In treatment, once his mood was stabilized, John focused on coming to grips with his negative feelings toward his parents, especially his father. John also addressed what he called his "self-centeredness" after his wife became pregnant, and he became aware of feeling deeply jealous and worried about not being the focus of her attention. His initial negative feelings about fatherhood made him realize that he had to address some of his personality issues that he avoided because of his previous perception that he had no serious flaws to change. John also realized that he had to be more responsible financially and began looking at ways to handle money better now that he was going to have a child to support. He grew up in a wealthy family and developed very poor money management habits over the years. John has gradually learned to focus less on himself and more on his pregnant wife.

- If you were part of John's outpatient treatment team, what would you suggest for his treatment plan?
- Should his wife attend some sessions with him? Why or why not?
- What would you want to know about his participation in AA other than that he is attending meetings?

Answers to Case Vignette 2

If you were part of John's outpatient treatment team, what would you suggest for his treatment plan?
Adherence to therapy addressing his depression and dual recovery issues and continued involvement in AA.

Should his wife attend some sessions with him? Why or why not?
Involvement of his wife in some of his treatment sessions would allow her to share her perspective on his struggles and how she could be helpful in his recovery work and also would give him the opportunity to be open with her about his issues and share his progress in treatment.

What would you want to know about his participation in AA other than that he is attending meetings?
Is he participating in the meetings? Is he working the steps of AA? Is he involved in the fellowship program? Does his have a sponsor, and if so, how is his relationship with his sponsor?

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Chapter 12

Adolescent Substance Use Disorders

Duncan B. Clark

Key Points

- Experimentation with tobacco, alcohol, and marijuana is common in adolescents.
- Risk factors for substance use disorder (SUD) include parental and peer substance use, substance availability, and mental disorders including attention deficit hyperactivity disorder, conduct disorder, and mood disorders.
- Before the assessment, confidentiality issues need to be addressed with the adolescent and parents.
- A thorough assessment includes distinct assessments of use of tobacco, alcohol, cannabis, and other drugs, including patterns of use and problems contributing to diagnoses.
- Because adolescents with SUD may be required to participate in treatment by parents or other authority figures, treatment initiation often focuses on motivational enhancement.
- Psychosocial interventions are the primary treatments, including cognitive behavior therapy and family therapy. Substance abstinence is the primary goal.
- Frequent marijuana use may cause academic deficits that may be misdiagnosed as, or exacerbate, attention deficit hyperactivity disorder.
- Pharmacotherapies have little empirical support for adolescents with SUD, but may be appropriate in selected patients.

For adolescents, substance use disorder (SUD) is among the most common psychiatric disorders. Experimentation with alcohol, tobacco, and cannabis typically begins by middle adolescence. Although a small proportion exhibit problematic substance use in early adolescence, SUD rates reach adult levels in late adolescence. Among 18-year-olds, about one in five will have had an SUD. The psychiatrist evaluating and treating adolescents with SUD often faces a variety of challenges, including limited motivation to achieve abstinence, problematic interactions between the adolescent and parents, and inadequacies in the facilities available to address the adolescent's range of problems. While acknowledging that current solutions are not ideal, this chapter will describe realistic approaches to addressing these challenges. The recommendations described here are generally consistent with the guidelines of the American Academy of Child and Adolescent Psychiatry (Bukstein et al., 2005). Psychosocial interventions to enhance the adolescent's motivation to achieve abstinence, encourage constructive parental engagement, and prevent relapse are available. Pharmacotherapy may supplement but cannot substitute for these efforts. Although some do not benefit, adolescents with SUD typically receive some help from these efforts, and most show improvement (Thatcher & Clark, 2006).

Rates and Risks

Prevalence of Substance Use and Substance Use Disorder in Adolescents

Among adolescents, alcohol, cigarettes, and marijuana are the most commonly used substances. Initiation of alcohol use and experimentation with tobacco in adolescence are normative, and consumption patterns typically increase significantly during this developmental period. Alcohol is the most commonly used substance. Community surveys in the United States, such as Monitoring the Future (Johnston et al., 2012), find that three-fourths of 12th graders have tried alcohol. Of 12th graders, more than one-half reported ever having been drunk, and about one-third reported having been drunk in the prior month, whereas only 3% reported any daily drinking. Cigarettes have been tried by about 40% of 12th graders, with 6% reporting daily smoking. Marijuana has been tried by about 45%, and 4% are daily users.

Among adolescents overall, the lifetime prevalence of SUD is about 10%. In parallel with use rates, SUD is relatively uncommon among young adolescents, and increases to a lifetime prevalence rate of about 20% at ages 17 to 18 years old (Merikangas et al., 2010). Of these older adolescents with SUDs, the most commonly involved substances are alcohol and marijuana. In adolescent addiction medicine clinics, adolescents with severe SUD involving multiple substances that are rare in community samples are relatively common.

Risk Factors

The risk factors for SUD (Clark & Winters, 2002) highlight characteristics that may perpetuate substance use and increase relapse risks. A family SUD history is a risk factor for adolescent SUD that operates through genetic and environmental mechanisms. At this time, the genetic mechanisms remain unknown. Family history also operates through environmental mechanisms that can be changed. Parental modeling of substance use increases use of similar substances in adolescents. Parents need to understand that their own substance use may contradict their exhortation to their teen to be substance abstinent. In addition, conscientious parental supervision can delay substance use and improve treatment outcomes.

Adolescents' and peers' substance use tend to be similar. Adolescents who use substances seek out substance-using peers, whereas substance-using peers and siblings may influence an adolescent to use alcohol and drugs. Inadequate parental support and perceived parental rejection are related to affiliation with substance-using peers, whereas assertiveness and psychosocial maturity in adolescence may reduce the influence of substance-using peers.

Substance availability influences use. The increase of the minimum drinking age to 21 years in the United States in 1984 was associated with a decrease in adolescent alcohol use. Nevertheless, most high school–aged teens report that they find alcohol, cigarettes, and marijuana relatively easy to obtain. Teens often obtain alcohol and other substances from an older sibling or peers.

The behavioral pattern that culminates in adolescent SUD typically begins in childhood, long before adolescents first experiment with substance use. A constellation of childhood mental disorders including attention deficit hyperactivity disorder (ADHD), conduct disorder, and major depressive disorder predict the development of adolescent SUD. These mental disorders may be conceptualized as constituting suprathreshold variations in psychological dysregulation. Psychological dysregulation reflects difficulties in control with affect, cognition, and related behaviors. Traumatic experiences, such as physical or sexual abuse, may contribute to psychological dysregulation, post-traumatic stress disorder, and major depressive disorder. These risk factors are characteristics important to consider in treatment planning and implementation.

Screening

Screening instruments are short assessment tools designed to detect the possible presence of an SUD. To screen for alcohol use disorder in adolescents, the National Institute on Alcohol Abuse and Alcoholism recommends two questions, inquiring about the adolescent's alcohol use pattern and alcohol use in his or her peers (NIAAA, 2011). By extension, screening for frequent use of specific substances followed by a diagnostic interview for pertinent substances is a reasonable and efficient approach.

An alternative approach is the utilization of screening instruments that have been shown to identify adolescents likely to have SUD (Cook et al., 2005). For alcohol use disorder, the Alcohol Use Disorders Identification Test, or AUDIT, includes three questions on alcohol consumption and seven on related problems. For SUDs more generally, CRAFFT includes three questions inquiring about the substance use history (i.e., alcohol, marijuana, and other drugs), followed by six questions on substance-related problems. For adolescents with positive screens, a diagnostic assessment is needed. These instruments include items that are somewhat redundant with the information collected by the diagnostic interview. Thus, the use of such screening instruments in the psychiatric setting may unnecessarily lengthen the assessment protocol.

Assessment

A thorough clinical assessment of SUD in adolescents includes distinct evaluations by substance types (i.e., tobacco, alcohol, cannabis, other drugs), stages (i.e., initiation, regular use, frequent use), patterns (e.g., periods of daily use or abstinence), and related problems (Clark & Winters, 2002). The distinct and explicit evaluation of each substance category is important to avoid patient misinterpretation or obfuscation. For example, an adolescent with daily marijuana use may deny "drug use" due to the misconception that cannabis is not a "drug." An adolescent may deny "problems" in an effort to argue against the need for treatment while being willing to describe use patterns. Treatment planning should not proceed until a reasonably valid assessment has been completed.

Although unstructured clinical interviews are generally utilized in health care settings, structured interviews have been shown to better detect and diagnose psychiatric disorders including SUD in adolescents. For the diagnostic interview, a section on SUDs has been included in the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS) available at the Western Psychiatric Institute and Clinic website (psychiatry.pitt.edu/research/tools-research/ksads-pl).

Confidentiality issues figure prominently in adolescent SUD assessments. To obtain valid reports on substance use from adolescents, cooperation is obviously needed. Adolescents often actively conceal the extent of their substance use from their parents. Although open communication among parents, adolescents, and treatment team members would usually be ideal, adolescents are often unwilling to provide accurate reports if the reports would be shared with parents. The regulations pertaining to adolescents in addiction treatment vary by state. In Pennsylvania, adolescents receiving treatment in drug and alcohol programs are the consenting party and retain confidentiality rights. Confidential information can be provided by the treatment team members to the parents only with the adolescent's explicit and written permission. To provide information on the applicable regulations and clinic procedures, an explicit discussion of the approach to be taken needs to be conducted with the adolescent and parents before initiating the assessment.

The reports of adolescents on their substance use may be supplemented by laboratory tests of urine, saliva, or blood. The purposes and the consequences of subsequent findings need to be considered before testing. In some circumstances, the adolescent, parents, and the treatment team may agree on the purpose and value of testing. An adolescent may be interested in providing validation to skeptical parents that they have achieved substance abstinence. A contingency management arrangement may involve a test confirming abstinence for a milestone and a related reward or privilege to be provided. A laboratory test may be required by a judge as part of a probation requirement, with a positive test leading to incarceration. The use of laboratory testing by judicial authorities may be outside the control of the treatment team, yet may be a circumstance that can be incorporated into treatment planning. A problematic circumstance occurs when a parental request for laboratory testing contradicts the adolescent's wishes and is intended to circumvent the confidentiality

arrangement. In the latter situation, an explicit discussion is needed, the structure of consent and confidentiality needs to be reviewed, and the communication of and responses to laboratory results need to be planned. Adolescents coerced into providing specimens for laboratory tests may respond with diminished treatment engagement and may attempt to subvert substance use detection.

Parents and other authority figures may be misinformed about the appropriate utilization of laboratory tests. Some may believe that such tests can be used to accurately and conclusively track day-to-day or week-to-week substance use patterns to monitor treatment effects or adherence to abstinence. In fact, laboratory tests have considerable limitations. Consequently, laboratory tests cannot be considered a substitute for valid adolescent reports.

The initial assessment for adolescents with SUDs extends beyond SUD and comorbid mental disorders to include possible substance use complications. In addition, the assessment of treatment response is an ongoing process. The parent–adolescent relationship is a central concern in adolescent SUD treatment. Problematic parent–adolescent relationships may contribute to or result from SUD. Adolescents with SUD may become adept at concealing their substance use and subverting parental supervision. Effective parental monitoring, communication, and emotional support facilitate psychosocial interventions for SUD. Siblings sharing the household with the adolescent patient may be influenced to use substances, and therefore attention to sibling relationships is important. Similarly, peer relationships need to be assessed and monitored. Adolescent substance use often interferes with academic achievement. The use of alcohol, marijuana, and other illicit drugs subjects the adolescent to legal and social sanctions, such as school expulsion and incarceration. Intoxicated driving among adolescents remains a major public health concern. Adolescents with SUDs are more likely to be sexually active, to initiate sexual activity at a younger age, to have multiple sexual partners, and to have sexually transmitted diseases. Unplanned pregnancy is more common among female adolescents with SUD than among comparable peers without SUD. Substance use can cause inattention, irritability, impulsive aggression, anxiety, and depression. SUD is a risk factor for suicidal ideation and attempts. These effects are often mislabeled as independent of SUD. Adolescents with SUDs tend to have a high rate of self-reported health symptoms associated with depression and anxiety, with few abnormalities on physical examination or laboratory tests. Adolescents with SUDs also tend to have sleep problems. Although demonstrable substance effects on adolescent brain development have not been definitively demonstrated, substance use has effects on neuropsychological functioning, including impaired working memory and executive functioning. These complications have implications for treatment planning and implementation.

Diagnosis

Although the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* of the American Psychiatric Association (DSM-IV) is the most recent available, the fifth edition (DSM5) is expected in May 2013 (www.dsm5.org). Most of the SUD symptoms items are essentially unchanged. Craving has been added as a criterion item. The categorical approach to the syndrome has changed, with the DSM-IV distinction between abuse and dependence eliminated in DSM5.

The application of the DSM items to adolescents requires some consideration of developmental issues. Compared with adults, adolescents with SUD more quickly transition from regular substance use to SUD, use alcohol less frequently, and are less likely to experience alcohol-related withdrawal and blackouts. Because alcohol tolerance occurs as a normal developmental phenomenon, the definition of tolerance as a criterion for alcohol use disorder (AUD) may be problematic when applied to adolescents. The item indicating alcohol use was "more than intended" assumes intentions that may be absent. Because adolescents are often pressured by parents or other authority figures into addiction treatment, "unsuccessful efforts to control substance use" may be less common among adolescent patients than among otherwise similar adults. Explanations may be needed to solicit valid diagnostic information.

Case Vignette 1

Robert is a 16-year-old male who has been suspended from school for being in possession of marijuana on school grounds. He arrives at the clinic with his mother for a scheduled assessment. After being greeted and introduced to the treatment team member conducting the evaluation, the mother asks to speak with the clinician alone. The clinician explains that the information provided by the adolescent to the clinician will be held in confidence and that she prefers to meet first with the adolescent, then with the mother and adolescent together. The adolescent describes daily marijuana use when meeting alone with the clinician, and he comments that his parents are only aware that he has used in the past. In meeting with the adolescent and mother, the mother asks that a laboratory drug test be conducted. The school requires documentation that the assessment has been conducted for the adolescent to be allowed to attend school.

- How would you best maintain Robert's engagement and his confidentiality?

Answer to Case Vignette 1

To abide by the confidentiality agreement and encourage adolescent participation, the clinician cannot directly share that the adolescent has confided frequent substance use. Because conducting a laboratory test would indirectly violate this confidence, the clinician can reasonably decline conducting this procedure. A note can be provided to the adolescent stating that the clinic visit occurred with no sensitive information. A recommendation for continuing the assessment and initiating treatment can be provided to the adolescent and mother.

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Treatment

Helpful psychosocial and pharmacological treatment modalities are available for adolescents with SUD. Some adolescents with SUD substantially improve without participating in treatment. Adolescents improving without formal interventions cite a variety of constructive influences, including informal interpersonal support, formal aids, behavioral self-management, and alternative activities. For adolescents with more severe SUD, related social problems, and psychiatric comorbidity, spontaneous improvement is less likely, and systematic interventions are typically needed.

Developmental Considerations

Adolescents with SUD require treatment approaches targeting specific adolescent issues, including parental involvement, limited motivation, neurocognitive immaturity, and psychiatric comorbidity. Treatment techniques borrowed from adult addiction programs typically need some modification to be applicable with adolescents. To one degree or another, most adolescents are coerced into treatment by parents or other concerned authority figures. Addiction program assessment and treatment may be required as part of juvenile justice probation requirements or to gain reinstatement in school after suspension. Of course, similar circumstances do occur with adults. However, adults typically express some interest in treatment and may present themselves voluntarily, whereas adolescents with SUD typically enter and stay in treatment at the insistence of authority figures. At treatment initiation, adolescents typically have little personal motivation to reduce or discontinue substance use. Consequently, motivational enhancement is critical for engaging adolescents in treatment. The involvement of parents or parent figures is also an essential element. Interactions with parents are central to the daily lives of adolescents, and treatment of adolescents without regard for parental involvement is unlikely to be successful.

Adolescents with SUD often have delays or deficits in neurocognitive development, particularly in executive functioning. Self-control of cognition and attention, emotions, and behavior are often limited in these adolescents. Insight into the immediate and future consequences of substance use is often poor. These limitations impair adolescents' ability to understand the rationale for treatment and to respond to recommendations. Adolescents' poor insight about the adverse effects of substance use on mood, cognitive abilities, and impulse control may hinder their willingness to initiate abstinence. Unfortunately, strategies targeting comorbid mental disorders in the context of ongoing substance use are typically unsuccessful.

Level of Care

Treatment planning for adolescents with SUD is an ongoing process including selection of a treatment setting, modality, intensity, and duration. The required level of care is determined by the severity and chronicity of SUD symptoms, associated problems, and prior treatment history. The level of care most likely to be effective while also the least restrictive possible is ideal. Hospital-based inpatient treatment may be needed when severe alcohol withdrawal or acutely dangerous behavior is present.

Residential settings may be as restrictive as inpatient settings, but medical support is less available, and treatment may be less intensive. Residential settings may be needed where adolescents show ongoing substance use with poor response to treatment and limited psychosocial support. The selection of treatment setting may be influenced by facility availability, health insurance coverage limitations, and parental financial resources. Intensive outpatient programs typically involve lengthy visits several days each week. Outpatient programs combining weekly visits with interim support through informal sources, including mutual support groups, represent the least intensive treatment level.

Psychosocial Treatment

Psychosocial treatment may be structured to include individual sessions, groups with or without a professional leader, or the adolescent with family members. After evaluating motivations for engaging in counseling and for discontinuing substance use, the interventions may need to be initially directed toward enhancing motivation. When sufficient motivation is evident, the adolescent may be engaged in learning techniques that can enhance control of cognitions, emotions, and behaviors that may interfere with abstinence and social skills to resist peer substance use encouragement. Contingency management may be utilized by parents or other authority figures to increase the likelihood of abstinence or to enforce sanctions for substance use. Family-focused approaches typically seek to enhance parent–adolescent communication, support parental supervision efforts, and involve family members in activities likely to encourage the adolescent's substance abstinence.

Motivational Enhancement Therapy

Motivational interviewing and motivational enhancement therapy describe systematic techniques that facilitate the identification of personal goals and the recognition of obstacles in achieving goals (e.g., adverse effects of substance use). Motivational enhancement is often particularly relevant for adolescents with SUD, who may be unable or unwilling to acknowledge that their substance use has adverse effects. In contrast to confrontational techniques, the hallmark of motivational enhancement techniques is to encourage the adolescent to identify problems and solutions through their own insights.

Although the therapist generally facilitates rather than directs the topical focus with this approach, consideration of specific pertinent topics may need to be encouraged. Because adolescents are often brought to treatment by concerned parents, an initial focus may be on substance-related conflicts with adults or other problems that led to treatment initiation. Some substance use effects may be perceived as problems, although effects on cognitive abilities and affect may be difficult for some teens to recognize and acknowledge. The possibility that substance use may lead to legal consequences, including arrest and incarceration, and the potential hazards of substance use, such as risks for motor vehicle crashes, may also be worth discussing.

Confrontation and the "scared straight" approach are antithetical to motivational enhancement approaches. Parents may have confronted the adolescent before treatment initiation, and punitive methods may have been attempted. Although examples may be found where punitive approaches were apparently useful, such confrontations often lead adolescents to be less communicative and thus tend to be counterproductive for increasing adolescent engagement. Motivational enhancement techniques encourage the adolescent to gain insights through self-exploration. By modeling motivational interviewing techniques for parents, the therapist may provide them with an alternative approach that may improve communication.

Case Vignette 2

Megan, A 17-year-old female, reports binge drinking every weekend. She believes this is not a problem, and she is not interested in treatment. She has "hangover" symptoms on Sunday morning. She also has conflicts with her parents about alcohol use.

- Do you think a motivational interviewing approach to engage Megan would be appropriate?
- What would the goals of this intervention be?

Answer to Case Vignette 2

The clinician can elect to use a motivational interviewing approach to structure the style and content of the initial intervention. The goal of this intervention is to facilitate self-exploration about the perceived benefits and adverse effects of alcohol use. The style is neither judgmental nor confrontational. The ideal result is that Megan realizes that alcohol use is causing problems and that discontinuing alcohol use would be the optimal approach to solving these problems.

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Cognitive and Behavioral Interventions

The utilization of individual behavioral and cognitive therapy approaches assumes that the adolescent's goal is substance abstinence. Attempts to utilize these techniques with adolescents intending to continue substance use are typically frustrating and futile. With adolescents interested in achieving substance abstinence, the application of behavioral and cognitive therapy techniques can be effective and rewarding.

Behavior therapy conceptualizes SUDs as learned behaviors facilitated by specific environmental stimuli and rewarded by substance effects or social benefits. The analysis of substance use behaviors involves the identification of antecedents, behavioral characteristics, and consequences (i.e., "ABCs"). In this context, the examination of antecedents involves the identification of environmental situations that lead to substance use initiation, such as encounters with specific substance-using peers, skipping school classes, or attending parties without adult supervision.

Interventions to reduce social influences may begin with facilitation of the adolescent's identification of social situations in which substance use is likely through focused discussion or diaries. A collaborative analysis of the thoughts or emotions that may mediate between the situation and substance use may be useful. The social skills to avoid such situations or to decline substance use may be described, modeled by the therapist, and practiced by the adolescent with the therapist. An increase in constructive alternative activities may provide a substitute for problematic behaviors. The completion of homework assignments using a diary to describe problematic situations and responses may be helpful to encourage skill implementation.

For some adolescents, internal states, including boredom or anger, may precipitate substance use. Other antecedents reduce the likelihood of substance use, such as attending school, supervised activities, or constructive hobbies. Thus, one focus may be increasing encounters with positive antecedents while avoiding antecedents likely to lead to substance use. The behaviors selected in particular situations also influence whether substance use occurs. For example, in response to an encounter with substance-using peers, an adolescent may elect to exit the situation or exhibit assertive behaviors to resist peer influence. Emotional states may also be substance use antecedents. An effective response to anxiety may be the application of relaxation techniques rather than substance use. Because the selection of SUD behaviors is influenced by cognitions, cognitive behavioral therapy (CBT) adds thoughts and perceptions as antecedents to be considered in behavioral techniques. Expectations about substance effects are a pertinent example. For abstinent adolescents, thoughts or cravings about substance use may need to be monitored and managed. An adolescent may be instructed to monitor his or her behaviors in response to important antecedent situations to evaluate improvement and as a behavior change technique. The management of consequences may also improve outcomes. For example, adolescents may receive negotiated rewards for substance abstinence. Contingency management may

be useful for adolescents not committed to abstinence as well as for adolescents otherwise motivated to discontinue substance use. The concrete style of behavior modification techniques may be particularly suited to adolescents, who may struggle to comprehend or perceive value in more abstract or nebulous psychotherapy approaches.

Family Interventions

To some extent, family interventions are involved in all treatment plans for adolescents with SUD. The focus on family interactions may target parental involvement in treatment evaluation and planning, communication and support, parental supervision, inadvertent or explicit substance use encouragement by family members, or other problematic family interactions. Parent-directed contingency management may also be considered a family interaction intervention.

In the process of implementing family interaction interventions, clinicians must conduct an ongoing evaluation of the optimal balance of individual and family techniques and the time dedicated to each approach. For parents with realistic expectations who are ready, willing, and able to engage in learning more effective parenting approaches, listen to their adolescent in the intervention context, discontinue punitive responses, and invest time and effort into building their relationship with the adolescent, the adolescent will likely benefit from a major focus on family interactions. At the other extreme, spending a significant proportion of intervention time on family interactions may be counterproductive in some instances. Parents with their own SUD need to address their problems through independent treatment. Some parents may engage in confrontations during sessions that may be counterproductive to the therapist's efforts to facilitate adolescent engagement. Most families will have a mix of facilitative and counterproductive characteristics that change over time.

To the extent that the adolescent provides the treatment team with information that is not conveyed to the parents, parents may need to be reminded over the course of treatment that they cannot assume that the absence of reports from the treatment team can be interpreted as indicating improvement or substance abstinence. On the other hand, adolescents often need to be encouraged to inform their parents about their substance use in order to engage parents in providing appropriate supervision, contingency management, and support.

As an alternative approach addressing treatment engagement and retention problems, experimental programs have been successfully developed and tested that implement interventions in the home. Although the opportunity to observe family interaction in the home and the logistics of home interventions may improve engagement, the time and related cost required are typically not covered by health insurance programs or other sources. Such interventions are not widely available.

Groups

Group interventions with adolescents may be conducted with a professional leader as part of a comprehensive program or as a leaderless mutual support intervention. Attendance at 12-step groups (e.g., Alcoholics Anonymous [AA] or Narcotics Anonymous [NA]) has been

recommended in some practice parameters. To the extent that group interventions are effective, their relatively low cost can result in a high degree of cost-effectiveness. The value of such groups depends on the compatibility of the approach with the adolescent's attitudes and characteristics, the group structure, and the characteristics of other group members. In the context of comprehensive programs, the group intervention may be tailored to meet group members' needs and monitored to avoid problems.

Mutual support groups without professional leadership or other monitoring can be similarly helpful but have potential problems. Many regions do not have mutual support groups specifically tailored to adolescents, and attendance would therefore involve a mix of adult and adolescent members. Some adults may prove very helpful, providing guidance and support. Unfortunately, some adults may engage in predatory behavior toward vulnerable adolescents. For groups exclusively composed of adolescents, support and mutual understanding are potentially constructive. On the other hand, some adolescent group members may engage in inappropriate facilitation of substance use and other activities incompatible with progress. As with any intervention, some direct or indirect oversight is needed to monitor the intervention implementation and effects.

Case Vignette 3

Claire, a 16-year-old female, is participating in individual psychosocial treatment and attends AA meetings. She confides that a young adult male she has met at the AA meeting asked to get together with her after the meeting. They smoked marijuana, and he has asked to see her again.

- Should Claire continue to go to AA?
- What is your course of action?

Answer to Case Vignette 3

In this circumstance, the self-help group is counterproductive, leading to an inappropriate interaction. The adolescent can be encouraged to share this incident with her parents. Even if the adolescent declines, the clinician can recommend to the adolescent and parents that attendance at the AA group be discontinued at this time.

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Pharmacotherapy

Pharmacotherapy for adolescents with SUD has a limited empirical basis (Clark, 2012). Nevertheless, clinicians often utilize medications with these adolescents, particularly for symptoms of comorbid psychiatric disorders. Potential pharmacotherapy targets include alcohol metabolism, substance craving, withdrawal, and comorbid psychiatric disorders. In general, pharmacotherapy may be useful as an adjunct to but not a substitute for psychosocial interventions promoting abstinence.

Alcohol Aversion Pharmacotherapy

Disulfiram counteracts the reinforcing properties of alcohol consumption by changing alcohol metabolism. During disulfiram use, alcohol consumption causes nausea, hypotension, and flushing. Disulfiram deters alcohol use through anticipation of these effects. This approach is appropriate only in highly motivated, cooperative, and informed adolescents who have failed other approaches. Disulfiram is not recommended here, and if used at all, disulfiram should be cautiously used with close monitoring.

Alcohol Craving

Alcohol craving may increase the risk for relapse. Naltrexone and acamprosate have been shown to reduce craving in adults with AUD. Although not particularly hazardous, the benefits of these interventions for adolescents with AUD have not been established. Naltrexone and acamprosate may be appropriate for some motivated adolescents after alcohol abstinence has been achieved.

Alcohol Withdrawal

Pharmacotherapy for alcohol withdrawal is sometimes needed after an abrupt cessation of daily alcohol use in individuals with severe alcohol dependence. Severe, acute alcohol withdrawal accompanied by physiological symptoms (e.g., elevated heart rate and blood pressure) is rare in adolescents. These acute alcohol withdrawal symptoms are very hazardous and require medically supervised detoxification in an inpatient hospital setting. In this circumstance, benzodiazepines may be utilized to moderate withdrawal symptoms and reduce the likelihood of seizures and other serious medical complications. Beta-blockers, clonidine, and antiepileptic medications may also be needed. This approach should not be undertaken without continuous medical supervision. Benzodiazepines have high addiction and diversion potential, and their use is inappropriate for adolescents with SUD under other circumstances.

Nicotine Craving and Withdrawal

Adolescents with SUD often smoke cigarettes, and nicotine dependence is common in these patients. Interventions to facilitate the discontinuation of cigarette smoking and other tobacco use may improve SUD outcomes. Along with psychosocial interventions, nicotine replacement and bupropion are reasonable options. Nicotine replacement may be delivered through a variety of vehicles, including gum, lozenges, transdermal

patches, inhaler, and nasal spray. Bupropion may also be helpful in some cases. Since bupropion is also indicated for major depressive disorder and ADHD, adolescents with these comorbid disorders may be particularly appropriate candidates for this approach.

Comorbid Psychiatric Disorders

Adolescents with SUD frequently present with comorbid psychiatric disorders, including major depressive disorder, anxiety disorder, ADHD, and conduct disorder. For adolescents with ongoing substance use, the primary intervention is substance abstinence. After an extended period of substance abstinence, the utilization of pharmacotherapies typically used for adolescents without SUD history is appropriate with some exceptions. Although these pharmacotherapies are unlikely to be useful in the context of ongoing substance use, the application of these medications may be reasonable in some instances when ongoing abstinence may be uncertain.

Major Depressive Disorder

Among adolescents with ongoing substance use, consumption of alcohol, marijuana, or other substances likely contributes to depressed mood. These adolescents and their parents need to be clearly informed that substance abstinence is the initial step in addressing depressed mood and in evaluating whether medication may be useful. Adolescents achieving abstinence for several months often show sufficient improvement in mood that pharmacotherapy is not warranted. Among those abstinent adolescents with ongoing depression symptoms, antidepressant medications are appropriate to consider. Antidepressant medications have been shown to be efficacious in adolescents with major depressive disorder without SUD, and abstinent adolescents with continuing major depressive disorder symptoms will likely show similar responses.

The consideration of antidepressant medications for adolescents with symptoms of major depressive disorder in the context of ongoing substance use is more problematic. Controlled trials and clinical experience indicate that, on average, these adolescents do not benefit from antidepressant medications (Cornelius et al., 2009, 2010). Systematic psychosocial approaches, including cognitive behavior therapy and motivational enhancement therapy, have been found to be helpful for both depression and substance use in these adolescents (Cornelius et al., 2011). Even with this information, some adolescents with these characteristics and their parents still prefer to try antidepressant medications. Particularly when psychosocial interventions and other approaches have not succeeded, this may be a reasonable decision. The utilization of antidepressant medications in such less than ideal circumstances has to be undertaken with the understanding by all concerned that the likely benefits, side-effect profile, and hazards are unpredictable.

Anxiety Disorders

Like major depressive disorder, anxiety disorders often improve with substance abstinence. Among abstinent adolescents with ongoing anxiety symptoms, antidepressant medications and buspirone are appropriate options. Adolescents with comorbid anxiety disorders and SUD may have experienced diminished anxiety symptoms with prescribed or illicit

benzodiazepine use. In most adolescents with SUD, the potential problems with benzodiazepines include consumption for intoxication, use in greater than prescribed amounts, dependence, and diversion. These potential problems offset whatever potential benefit may be realized. For adolescents with prior problematic substance use, benzodiazepines remain potentially problematic even after a period of abstinence and should be avoided.

Bipolar Disorder

Adolescents with SUD often present with labile mood attributable to substance use or affective dysregulation. Adolescents and parents may label affective instability as "mood swings" and conclude that bipolar disorder is causing these symptoms. Adolescents and their parents may need to be educated about the effects of substance use on mood, including intoxication and withdrawal, and the distinctions among these syndromes. The evaluation of bipolar disorder symptoms is hampered by ongoing substance use. Nevertheless, adolescents with SUD and documented bipolar disorder meeting diagnostic criteria during abstinent periods may benefit from prophylactic treatment. In some cases, the use of lithium, valproate or other antiepileptic medications, or second-generation antipsychotic medications may be helpful. For adolescents with mood instability, substance abstinence is the primary intervention. Mood stabilizing medications, including antipsychotic medications, may be reasonably considered in some cases.

Attention Deficit Hyperactivity Disorder

A history of childhood ADHD is common among adolescents with SUD. However, frequent marijuana use causes attention difficulties, diminished motivation, and poor academic achievement that may be misdiagnosed as ADHD. In such cases, substance abstinence is the primary intervention. Ongoing substance use may also exacerbate ADHD. Stimulant medications, including methylphenidate and amphetamine variants, improve ADHD symptoms. Their use among ADHD adolescents with substance abstinence is straightforward. Although there can be abuse or diversion of stimulant medications, conscientious monitoring can minimize these problems. For adolescents with ongoing substance use, these medications may enable SUD by counteracting problematic substance effects. Of course, interventions that inadvertently facilitate substance use need to be avoided. Clinical circumstances vary, substance use and symptoms change over time, and consequently, good judgment needs to be applied. Some flexibility may be needed to manage stimulant medications with the typical SUD adolescent. For many, the use of nonstimulant alternatives, such as atomoxetine or bupropion, may be the optimal approach.

Conduct Disorder

Among adolescents with SUD, impulsive aggression is often a concern. Substance abstinence remains the primary intervention, and psychosocial interventions targeting the antecedents to aggressive behavior are more likely to be helpful. When psychosocial approaches have failed, antipsychotic medications can be considered. Because antipsychotic medications may have unpleasant side effects and adolescents may not perceive subjective benefits, lack of adherence can be problematic.

Case Vignette 4

Benedict, a 17-year-old male with no prior history of ADHD symptoms, reports using marijuana four times per week. The adolescent reports difficulty concentrating. While in previous years he had been an excellent student, his father reports he has recently been failing tests. The adolescent reports that his concentration is neither better nor worse on the days that he smokes marijuana. The adolescent reports he took an Adderall (i.e., amphetamine-dextroamphetamine) tablet that he got from a friend, and that he felt better able to concentrate. He has discussed this experience with his parents. The adolescent and his parents think that he may have ADHD, and that previous clinicians have missed this diagnosis. They agree that a trial of Adderall would help determine whether ADHD is causing his school difficulties.

- What is the most likely cause of Benedicts attentional problems?
- What would be your plan for helping Benedict and his parents?

Answer to Case Vignette 4

In this situation, marijuana use is likely causing attentional problems and amotivational syndrome. The adolescent and parent need to be educated about marijuana effects, and the lengthy period of abstinence needed to determine whether marijuana is causing these academic problems. This discussion can be conducted without revealing the specific substance use pattern confided by the adolescent. The adolescent and parents can also be informed that, even if marijuana use in causing the concentration problems, Adderall would likely improve attention. Thus, an Adderall trial would not be informative. The most appropriate plan at this time is to encourage substance abstinence without starting pharmacotherapy.

Treatment Outcomes

The explicit and desirable goal of treatment programs for adolescents with SUD is substance abstinence. In the course of treatment, complete abstinence is rarely achieved for extended periods. Adolescent SUD tends to be a relapsing condition. Among adolescents in treatment, complete substance abstinence occurs in less than one in five over a 1-year period. Although some behaviors may be intolerable, interventions programs that eject adolescents for substance relapses are unlikely to be applicable for most of these patients. Although absolute and complete success is uncommon, improvement occurs with most adolescents. Among adolescents with SUD, about half will have continuing substance problems in adulthood. Persisting in treatment efforts is critical because the consequences of failure include worsening substance dependence, academic and social failure, criminal activity, medical consequences, adulthood substance dependence, and early death.

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Conclusions

Research Directions

Screening methods that may be helpful to identify adolescents requiring diagnostic assessments for SUD need further study to determine the most efficient approach and to clarify thresholds by developmental stage (Clark & Moss, 2010). The available intervention approaches are not optimally effective. A better understanding of the causes and consequences of adolescent SUDs would likely lead to more effective preventive interventions and treatments. Innovative psychosocial and pharmacotherapy treatments need to be developed and tested. In addition, successful intervention programs need to be standardized, costs determined, and advances implemented in clinical practice. At the present time, the most promising psychosocial intervention programs are comprehensive and expensive. The limited resources provided by health insurance, the source of most funding for adolescent SUD interventions, make such comprehensive programs infeasible. Although research advances may lead to the development of more cost-effective approaches, clinicians will need to work with the currently available interventions for the foreseeable future.

Clinical Recommendations

Whether in primary care settings or psychiatric clinics, adolescents need to be assessed for substance use and SUD. Before conducting the assessment, a confidentially agreement needs to be completed with the adolescent and parents. The adolescent needs to be assured that substance use reports will not lead to punitive consequences. When conducting SUD assessments, a structured interview is recommended to ensure that important problems are not overlooked.

Adolescents with SUD should receive developmentally appropriate interventions. Clinicians accustomed to helping adults with SUD will encounter challenges when intervening with adolescents. For many adolescents, the motivation for treatment participation is contributed by the parents. The adolescent may be initially uninterested in and unwilling to participate in treatment. For an adult patient, this circumstance would typically result in a terminated intervention. For an adolescent patient, this circumstance is the typical beginning of the treatment process. The psychiatrist and the adolescent's parents need to collaborate and be persistent in encouraging treatment attendance, participation, and engagement. The extent and characteristics of the parents' involvement may involve continuing evaluation and adjustments. Adolescents need assurance that their confidentiality will be respected while being encouraged but not required to provide their parents with information about their substance use and intervention efforts.

Aggressive confrontation in the early stages of treatment typically leads to adolescent disengagement. At the same time, a realistic discussion needs to occur about substance use effects and the likely consequences of ongoing substance use. The adolescent may be ambivalent about substance abstinence, have misperceptions about the benefits of substance use, and have unrealistic ideas about their economic, academic, or legal situation. To the extent that treatment team members present their views

and opinions while respecting that the adolescent may disagree, frank discussions can occur without arguments. Active listening can be combined with education.

The provision of interventions to these adolescents and their families typically involves frustrations for the clinician. The adolescent's ambivalence about participating may result in missed visits or unproductive sessions. Parents dissatisfied with the clinician–adolescent confidentiality arrangement may attempt to obtain information before or after the session. Parents who feel they have exhausted their personal resources for managing or addressing their adolescent's problems before the initiation of treatment may have the unrealistic expectation that these problems can be addressed without their involvement. For adolescents who have fallen behind in school, parents may be reluctant to schedule sessions that would interfere with school classes or other activities. Interactions with other authority figures, whether in writing, by telephone, or through other means, may be limited or prohibited by confidentiality issues. For adolescents who do not respond to outpatient interventions, intensive outpatient services, residential programs, or inpatient treatment may be refused or unavailable. These complications may result in the intervention requiring many uncompensated clinician hours. Ongoing institutional financial support may be needed for adolescent addiction programs to be viable.

Pharmacotherapy may be considered to supplement these efforts. Some adolescents, as well as some parents, may hope that a medication will substitute for a more comprehensive psychosocial approach. Such unrealistic expectations need to be addressed before initiating pharmacotherapy. Some adolescents rationalize their ongoing substance use with the concept that their comorbid mental disorder symptoms cause their substance use, and when these symptoms are effectively treated with pharmacotherapy, they will then discontinue substance use. Substance effects may be falsely attributed to otherwise nonexistent mental disorders by adolescents as well as parents. Unfortunately, many adolescents with SUD receive little or no benefit from pharmacotherapy. Pharmacotherapy in the context of ongoing substance use will almost always be unsuccessful. Adolescents and parents may need to be reminded that substance abstinence in the primary goal and that abstinence will most likely lead to improvement in other symptoms.

With adolescents engaged in treatment and motivated to achieve substance abstinence, the program can proceed to include behavior and cognitive behavior therapy interventions. Interventions focusing on social skills, anger management, and other effective approaches may reduce the likelihood of relapse. The involvement of parents in the implementation of contingency management interventions may also be important, in that such procedures can be implemented without a high degree of adolescent engagement or insight. The involvement of adolescents and their parents in treatment planning, communication and support, constructive relationship improvement, and facilitating abstinence are all important intervention activities. With adolescent engagement, parental efforts, and clinician persistence, interventions are often successful.

For the interested reader, further discussion of these issues can be found in textbooks such as Kaminer and Winters (2011).

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Chapter 13

Prevention and Harm Reduction Interventions

Inti Flores and Antoine Douaihy

Key Points

- Effective prevention approaches are required before and after symptoms become apparent because substance use disorders are chronic and relapsing illnesses.
- Three levels of prevention interventions are defined as universal, selective, and indicated.
- The U.S. National Institute of Drug Abuse (NIDA) has developed a list of principles for prevention, drawn from long-term research studies on the origins of substance use behaviors and the common elements of effective prevention programs.
- Prevention programs should enhance protective factors and reverse or reduce risk factors, should be tailored to address risks specific to population characteristics, and should be long-term, with repeated interventions to reinforce the original prevention goals.
- Harm reduction identifies the complexities of high-risk behaviors instead of pathologizing them.
- Harm reduction approaches provide a middle-way alternative between total abstinence and continued harmful use or behavior, therefore allowing different pathways for change.
- Harm reduction strategies are compassionate, pragmatic strategies that reduce harm, promote quality of life, and even decrease high-risk behavior.

Traditionally, addiction treatment programs have focused mostly on the management of individuals with severe substance use disorder (SUD), who represent a small percentage of all those with alcohol and drug use behaviors. For instance, heavy drinkers and binge drinkers with no or low physiological dependence represent a larger proportion of people than do drinkers with alcohol dependence. Therefore, even though per capita their risk for causing a fatal crash while intoxicated is less likely to happen, their large number means that they account for a majority of drunk-driving consequences, including deaths (Institute of Medicine, 1990). This has been described as a "prevention paradox," meaning that if we are focusing primarily on persons with severe SUD, we are not addressing most of the problem (Babor, 2010; Miller et al., 2011). This chapter discusses the basic understanding of the principles of prevention interventions and the three types of prevention interventions. It focuses also on harm reduction strategies targeting specific substances of use as well as high-risk sexual behaviors and human immunodeficiency virus (HIV).

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Prevention

Prevention is understood as any approach designed to avoid substance use behavior and reduce its health and psychosocial consequences. This approach can include activities aimed to reduce supply, based on the principle that the decreased availability of substances reduces the opportunities for a SUD, and actions aimed to reduce demand, including health promotion and disease prevention. Epidemiological studies have demonstrated continuous shifts between periods of increasing and decreasing abuse of substances (Sulkunen, 1976). Prevention interventions have the potential to change the trend, generate or reinforce the downward shift, or help diminish the rising trend. In addition, it is now well established that effective prevention approaches are required before and after manifestations are evident because SUDs are identified as chronic and relapsing illnesses. The prevention of recurrence and relapse is also recognized as an essential aspect of a public health strategy to reduce prevalence.

The need for an integrated strategy of supply and demand reduction was addressed during the 20th Special Session of the United Nations held in New York in 1998 (U.N. Drug Control Program, 1998). The session emphasized the importance of identifying the problem and assessing it as fundamental. then targeting it by promoting abstinence and reducing negative consequences of use through education, public awareness, early intervention, and facilitating access to care; and then forging partnerships through the promotion of a community-wide participatory and partnership approach. This approach is the basis for the accurate assessment of SUDs and the formulation and implementation of appropriate strategies, integrated into broader social welfare and health promotion policies and preventive education programs. Another focus should be on specific subgroups such as youth, with an emphasis on disseminating messages that are accurate and culturally appropriate. Three levels of preventive interventions exist on a continuum: universal, selective, and indicated, according to the level of risk of using substances. Prevention approaches may target different areas, for example, controlling affordability, availability through marketing, and harmful consequences of substance use in the population (Babor, 2010). The NIDA has developed a list of principles for prevention, drawn from long-term research studies on the origins of substance abuse behaviors and the common elements of effective prevention programs (NIDA, 1997).

Universal prevention is the strategy that addresses the general public or the entire population (national, local community, school, and neighborhood) with messages and programs aimed at preventing or delaying the use of substances. Gradual changes that reduce availability are effective. For example, modest tax increases do tend to reduce smoking and drinking, particularly among the young with low income. Overall reductions in use at the population level are observed in parallel reductions in psychosocial and health problems related to drug use (Babor, 2010).

Selective prevention includes those strategies targeting subgroups of the population identified at risk for developing a SUD (these persons may be at imminent risk or have a lifetime risk). How to identify these individuals at higher risk is a major challenge. Significant numbers of studies have

examined longitudinal risk factors for alcohol and other drug use disorders. Risk groups may be identified on the basis of biological, psychological, social, or environmental risk factors known to be associated with substance abuse (IOM, 1994), and targeted subgroups may be defined by demographics, family history, place of residence such as high drug-use or low-income neighborhoods, poverty, lack of health and social services, and psychiatric comorbidity. The significance of these risk factors varies during the developmental stages (NIDA, 1997; Villatoro et al., 1998). For example, it is now clear that the biological relatives of people with SUD are at higher risk themselves. Another well-established risk factor is relative sensitivity to alcohol: the ability to try to "hold your liquor" without feeling or appearing to be affected (Schuckit & Smith, 2010). Apparently this is a heritable trait on which individuals vary influenced by multiple genes (Joslyn et al., 2010). "Low-response" people (individuals who exhibit little response to a small dose of alcohol indicating relative insensitivity to the drug) have substantially greater risk for developing alcohol dependence. Being able to hold your liquor is not protective. Another example of a population that would benefit from a preventive approach is offenders with a history of SUD, just before and after release from jail. Release is a risky transition period, potentially leading to a return to substance use and an increase in drug-related serious consequences, including death, mostly related to decreased tolerance and overdose (Merrall et al., 2010). Exposure to risk factors does not necessarily lead to substance use or escalation to dependence. For instance, children raised in problematic family environments, even under circumstances where substances are easily accessible, may reach adulthood without having even experimented with substances, owing to the presence of protective factors that offset existing risk factors (Villatoro et al., 1998).

Indicated prevention interventions are defined as those targeting high-risk individuals who are already showing detectable signs or symptoms but who do not meet American Psychological Association *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) criteria for SUD, at an early stage of development. Less emphasis is placed on assessing or addressing environmental influences, such as community values. The aim of indicated prevention programs is not only the reduction in first-time substance abuse but also reduction in the length of time the signs continue, delay of onset of substance abuse, and/or reduction in the severity of substance abuse, conduct disorders, and alienation from parents, school, and positive peer groups. Intervening early is fundamental and necessary. As with most chronic illnesses, SUDs are usually easier to turn around if recognized and treated at an earlier stage of development, preventing later development of significant negative consequences. Another major reason for intervening early is preventing serious consequences of heavy drinking and other drug use (Hingsen et al., 2005). The main recommended goal of the brief intervention with heavy drinkers is to reduce consumption to a moderate- or low-risk level and also possibly abstinence. Another strategy for indicated prevention is reaching people in the course of their use behaviors to offer them services (Velicer et al., 2006). For example, tobacco quitlines offer free smoking cessation counseling by phone in the United States (1-800-QUIT-NOW), which have been found to be as effective as face-to-face services (Lichtenstein et al., 2010).

Harm Reduction

Harm reduction represents both an attitude and a set of compassionate and pragmatic approaches, considered a form of indicated prevention, designed to reduce the harm stemming from high-risk behaviors and increase quality of life for affected individuals and their communities (Marlatt, 1998). The recent integration of harm reduction policy into U.S. law has occurred long after the enactment of more comprehensive harm reduction policies in many countries in Europe, South America, the Middle East, and Asia (Ball et al., 2007).

Harm reduction refers to strategies, policies, and programs created in an effort to reduce the negative consequences to individuals and society that result from substance use. The compassionate aspect of harm reduction refers to understanding and approaching high-risk behaviors in a way that is respectful and inclusive of individuals affected by these behaviors and their communities. Harm reduction reflects a humanistic approach, and most recently it is recommended that individuals and their communities be involved in devising their own means to reduce harmful behaviors and defining their own ends as to what harm reduction will comprise (UNAIDS, 2010). The pragmatic aspect of harm reduction refers to the implementation of evidence-based strategies that have been proven scientifically to reduce harm in accordance with human rights protections (Degenhardt et al., 2010). Defining harm depends on multiple contextual factors and their potentially interactive nature.

Principles of Harm Reduction

The principles of harm reduction are based on a pragmatic view of drug use in society—at any given time, there will always be a segment of people who use drugs who are unable or unwilling to stop use. A harm reduction perspective recognizes that drug use represents a continuum of behaviors with associated harms, and works to meet users "where they're at" to reduce specific risks associated with their current patterns of use. Because the goal of harm reduction is to target well-defined risks, there is no solitary model that will be effective across a range of geographic, social, cultural, and political settings. The principles of harm reduction, however, are universally applicable.

1. Harm reduction focuses on specific risks and harms associated with substance use. In order for harm reduction to enact effective interventions, it must target well-defined risks or harms that are associated with the use of psychoactive substances. This targeting of harm reduction to specific risks means that harm reduction practices might vary substantially from one community to the next. Effective harm reduction necessitates identifying harms and their causes, and then implementing targeted interventions designed to disrupt the path that links drug use to specific negative outcomes.
2. Harm reduction is evidence based and evolving. A harm reduction approach depends on feedback that demonstrates the effectiveness of its practices in reducing the risks they target. The techniques of harm reduction must be safe, practical, effectual, and cost effective.

Reduced harm that translates into improved quality of life for individuals, community, and society is the rubric by which harm reduction policies are assessed.

3. Harm reduction is incremental, with a continuum of potentially positive outcomes. Rather than insisting on a single outcome (i.e., abstinence), a harm reduction approach recognizes the spectrum of ways in which an individual or society may benefit from small changes in drug use behaviors. The goals of harm reduction can be organized along a continuum that includes abstinence at one end, at the same time encouraging incremental movement along the continuum to reduce the negative consequences of drug use. The spectrum of harm reduction provides a variety of manageable options to drug users to reduce the risks associated with their own patterns of use.
4. Harm reduction is premised on compassion and respect for the autonomy of people who use drugs. At its core, harm reduction is a nonjudgmental approach that accepts people as they are. A harm reduction framework recognizes that the stigmatization and moral judgment of substance users contributes to the harms that result from drug use. By treating people who use drugs with dignity and compassion, it becomes possible to form an alliance with users to explore their struggles and target risks associated with their use.
5. Harm reduction recognizes socioeconomic, political, and biological factors that make individuals vulnerable to drug use and its associated harms. Not only do conditions of poverty and discrimination along the lines of race, class, gender, and sexual identity make some individuals more vulnerable to substance use and abuse, they also influence access to treatment and risk for specific drug-related harms. Harm reduction has an investment in social justice to the extent that social inequities mediate the harms associated drug use.
6. Harm reduction challenges existing practices and policies that maximize harm. From a harm reduction perspective, addiction and substance use represent incredibly difficult struggles through which users require support in order to minimize harm. Unfortunately, many of the policies affecting drug users are punitive and have the effect of removing support and services. In addition to implementing evidence-based practices to reduce harms associated with drug use, harm reduction uses evidence to challenge practices and policies surrounding drug control that have the effect of exacerbating the harms associated with drug use.

Specific Areas of Focus: Substance of Use

Alcohol

Alcohol is a widely used substance that is associated with a number of harms costly to both individuals and society. The disease model of alcoholism has long been the dominant paradigm used to understand problem alcohol use in the United States. Although this model has certainly been useful in many respects, it has also made it difficult to focus on the entire spectrum of alcohol use and alcohol-related harms. For example, although a minority of individuals has a diagnosable alcohol use disorder (AUD), far more people use alcohol to a lesser extent, yet their use often still results in significant harms. Within a disease model in which alcoholism is viewed as a chronic and progressive process, traditional treatment options have been specialized, intensive, and abstinence oriented (Marlatt et al., 2012; Willenbring, 2010).

A harm reduction approach to alcohol use has been incompatible with the classic disease model of alcoholism in which a single sip of alcohol is followed by complete loss of volitional control over drinking (Marlatt et al., 2012). Nevertheless, recent epidemiological research has begun to challenge traditional notions of AUDs, suggesting that rather than being progressive and often fatal, most AUDs remit without treatment (Dawson et al., 2005; Sobell et al., 2006). Changes in the conceptualization of AUDs and the epidemiology of problematic alcohol use, in conjunction with evidence suggesting improved outcomes for drinkers with both abstinence and reduced drinking, has opened the door to apply harm reduction approaches to alcohol use (Marlatt et al., 2012). Some of these evidence-based approaches are discussed below.

Brief Interventions and Motivational Approaches

In contrast to intensive, abstinence-based treatments for a small number of individuals with severe AUDs, brief interventions have emerged as an important harm reduction approach to problem alcohol use that can be employed across a range of different settings. Brief interventions have been demonstrated to be as efficacious as more intensive approaches and can be used to target harms associated with mild and moderate alcohol use (Project MATCH Research Group, 1997, 1998).

Brief interventions can take a multitude of forms. Motivational interviewing and related motivational enhancement therapies have received extensive support in the literature for their efficacy in promoting reductions in alcohol use and decreased drinking related harms (Marlatt et al., 2012). The motivational approach allows clients to explore ambivalence surrounding their alcohol use. Nonjudgmental exploration of the benefits and risks of drinking can facilitate identification of harms and assist clients in negotiating acceptable strategies to limit these harms (Miller & Rollnick, 2009). Motivational interviewing and related adaptations are practically implemented across a range of environments, including medical, college, and workplace settings. This is of particular importance given evidence to

suggest that college students are at high risk for alcohol use and associated negative consequences (Marlatt et al., 2012). In addition to face-to-face brief interventions, various web-based harm reduction interventions are being explored.

Cognitive Behavioral Skills Training

Cognitive behavioral skills–based treatments (CSTs) to alcohol harm reduction help clients address specific cognitive patterns associated with use and build skills designed to reduce use and associated harms. These approaches are often quite practical, including relapse prevention components that aid in identifying high-risk situations and then developing specific skills to be utilized in these settings to maintain drinking goals. CSTs can include cue exposure as well as more general approaches to target negative cognitions and daily social skills in an effort to better manage triggers for alcohol use (Marlatt et al., 2012). Harm reduction psychotherapeutic approaches may often combine different aspects of cognitive behavioral, motivational, and mindfulness-based techniques to achieve risk-reduction goals.

Contingency Management

Contingency management, premised on operant conditioning, uses positive reinforcement to maintain desired treatment outcomes. Although there has been support in the literature for contingency management, cost and feasibility are limited given the frequency with which objective screening for alcohol use must be utilized for accurate detection. Nevertheless, there may be benefit to reinforcing other positive outcomes, such as treatment attendance and engagement (Marlatt et al., 2012).

Disulfiram

Disulfiram inhibits the enzyme acetaldehyde dehydrogenase, which converts acetaldehyde formed from alcohol metabolism into acetic acid. Inhibition of acetaldehyde dehydrogenase leads to accumulation of acetaldehyde in the body with associated severe hangover symptoms. Disulfiram can thus be used to discourage alcohol consumption (Marlatt et al., 2012). Disulfiram's efficacy depends on medication adherence, and there is evidence to suggest that without close monitoring adherence is quite low (Barth & Malcom, 2010). Additionally, given the severity of physiologic symptoms induced by alcohol in a person taking disulfiram, this medication is less suited to reduction in alcohol consumption than to complete abstinence (Marlatt et al., 2012).

Naltrexone

Naltrexone is a mu-opioid antagonist that is used to reduce alcohol-induced release of dopamine from the nucleus accumbens, thereby decreasing the pleasurable effects of drinking (Marlatt et al., 2012). Naltrexone reduces the positive reinforcement associated with alcohol use and is compatible with both moderation and abstinence treatment goals.

Acamprosate

Acamprosate increases GABAergic inhibition through modulatory effects on NMDA receptors, thereby reducing alcohol withdrawal symptoms

and the urge to use alcohol (Marlatt et al., 2012). Acamprosate is thus complementary to naltrexone by mitigating the sensations that might lead to alcohol use.

Tobacco

Nicotine—most commonly obtained by smoking tobacco—is one of the most widely used substances worldwide. Smoking is a major cause of morbidity and mortality and is responsible for one in five or approximately 443,000 deaths per year in the United States (CDC, 2012). Cigarettes have been shown to be a strong risk factor in the development of lung disease, including cancer, cardiovascular, and cerebrovascular disease. In addition to personal disease-related harm associated with cigarette use, there is an enormous cost to society. In 2004, tobacco use cost the United States an estimated 193 billion dollars in lost productivity and health-related costs (CDC, 2009).

Despite the well-established and publicized harms associated with cigarettes, they are still widely used. In 2009, an estimated 46.6 million (20.6%) adults aged 18 years and up were current smokers (CDC, 2009). In addition to being highly addictive, causing uncomfortable symptoms of withdrawal in many users, nicotine is also a mild stimulant and can have the effect of calming and focusing its users. Although the use of nicotine itself is very low risk, it is the dominant method of obtaining the drug—smoking cigarettes—that accounts for the enormous harms associated with its use (Marlatt et al., 2012). Tobacco harm reduction (THR), then, is focused on substituting alternate, low-risk systems for nicotine delivery for cigarette smoking.

There is a variety of low-risk nicotine products whose use could greatly decrease the individual and societal harms resulting from cigarette use. These include pharmaceutical nicotine products that deliver nicotine that has been removed from tobacco (e.g., patches, gum, lozenges, inhalers) as well as smokeless tobacco products (ST). These include traditional chewing tobacco (snuff) and dry, powdered versions for nasal use. There has also been a recent increase in electronic cigarettes designed to produce low-risk nicotine containing vapor, closely simulating the act of smoking.

THR strategies have not been widely implemented despite their great potential to mitigate the enormous burden to individuals and society created by smoking. In large part, this is the result of the widespread misperception that ST use is itself a high-risk behavior (Marlatt et al., 2012). In particular, there remains a persistent perception among medical providers and laypersons alike that ST is associated with significant risk for oral cancers. Multiple epidemiological studies, including a 2004 review article, have determined this risk to be minimal (Rodu & Jansson, 2004). As noted by Phillips et al., a small increase in the risk for oral cancers—already a rare disease in Western societies—is greatly outweighed by the decreased risk for lung and cardiovascular disease directly attributable to smoking (Marlatt et al., 2012). Furthermore, the widespread adoption of THR has the potential to decrease the significant harms associated with second-hand smoke.

Cannabis

Cannabis is the most commonly used illicit drug in the United States (World Health Organization, 2008). Cannabis is widely regarded as a relatively low-risk substance, and this perception has made it challenging to address the potential harms associated with its use. Although for many people infrequent use may be associated with very little harm to themselves and to society, more frequent users are at increased risk for dependence and may be more susceptible to related harms. Indeed, as noted by Roffman and Stevens, in discussing harm reduction related to cannabis, it is crucial to keep in mind both extremes in the continuum of cannabis use profiles and consequences (Marlatt et al., 2012).

Of particular importance to harm reduction with regard to cannabis is use among adolescent and young adults. Rates of cannabis use are highest amongst individuals aged 18 to 25 years. Epidemiological studies have raised concern that use among adolescents is associated with poorer psychosocial outcomes. Given the drug's acute effects on cognition, it is easy to see how frequent users may be hampered by their use. Additionally, cannabis use has clearly been associated with psychiatric consequences, including acute panic reactions, depersonalization, and increased risk for acute psychosis in susceptible individuals. Given that the most common means of utilizing cannabis has been through smoking, use has also been linked to respiratory and cardiovascular risks (Marlatt et al., 2012).

A harm reduction approach to cannabis use should take into account all of what we know about the risks and benefits of cannabis use to help users minimize the harm associated with their current patterns of use. Providing objective information that neither exaggerates nor minimizes risks can avoid alienating users while helping them make informed choices that decrease the potential for associated harm (Marlatt et al., 2012). Brief "check-up" interventions to assess use and provide feedback without pressure to change may aid in engaging individuals whose use is problematic but who might not have otherwise sought treatment (Walker et al., 2006). Treatment approaches incorporating CST, motivational, and contingency management approaches have shown efficacy in helping users decrease use and associated problems (Marlatt et al., 2012). Finally, encouraging lower-risk modes of administration, such as ingestion or inhalation following vaporization, can decrease adverse effects resulting from inhalation of smoke.

Cocaine

Cocaine and its derivative crack cocaine are powerful stimulants that can be administered by a variety of methods, including injection, snorting, smoking, and oral ingestion. Its use is associated with a number of severe physical, mental, and social harms. Transmission of blood-borne viruses like HIV and hepatitis C virus (HCV) is consistently associated with stimulant use; in addition to engaging in risky sexual practices, users who inject cocaine are more likely than heroin injectors to engage in particularly risky behaviors surrounding use of equipment for drug preparation and injection (Marlatt et al., 2012). Cocaine users are also at risk for a host of other significant cardiovascular, pulmonary, neurologic, and infectious complications. Harm reduction for cocaine use is focused on modifying

use patterns to minimize harmful effects on users' physical, mental, and social health.

Analogous to the implementation of needle and syringe exchange programs (NSEPs) for other intravenous drug–using groups, programs promoting safer injection are a cornerstone of decreasing transmission of blood-borne viruses among cocaine users. Provision of materials (needles, syringes, water, containers for drug preparation) can reduce risk for viral transmission. Rubber tips can be used on crack pipes to protect users with cut or burnt lips who are sharing a pipe (Marlatt et al., 2012). In addition to simply providing materials for safer injection, the possibility of creating safe injection sites ("user rooms") has been suggested as a harm reduction strategy. User rooms would provide a controlled environment in which users could prepare and inject drugs safely in the presence of trained personnel who could assist in the event of an emergency (including overdose). These sites would also function as a safe place to dispose of drug-related paraphernalia, reducing public disorder associated with intravenous use. Although the frequency with which cocaine users often inject could pose a challenge to safe injection spaces, data from other countries suggest positive outcomes associated with supervised injection sites (Marlatt et al., 2012). Additionally, user rooms provide an interface between marginalized substance users and providers of health care and social services, facilitating education, risk reduction outreach, and referral to a variety of related services (Tyndall et al., 2006).

A harm reduction approach that has been attempted with cocaine users involves the use of peer health advocates to provide education regarding harm reduction techniques for both drug use and high-risk sexual activity. This innovative approach harnesses preexisting peer networks, training active drug users in harm reduction techniques and allowing them to disseminate information and skills throughout their communities. This approach facilitates the spread of information and skills to a population that might have never come in contact with providers. Additionally, information might be better received coming from peers rather than providers. Study of one such program, the Risk Avoidance Partnership, suggests positive outcome for both advocates and their peers (Weeks et al., 2006).

Although there have been controlled trials investigating possible pharmaceutical interventions for cocaine use, studies to date have not discovered a clinically useful "substitute" therapy. The quick-onset, pleasurable effects experienced by cocaine users make the search for a reduced-risk substitute that is acceptable to users challenging. Nevertheless, clinical investigations in this area are ongoing.

Amphetamines

Amphetamines are a class of central nervous system (CNS) stimulants that includes prescription medications (methylphenidate, dexamphetamine) as well as illicit rugs (methamphetamine, MDMA). Administration routes include snorting, oral ingestion, smoking, rectal administration, and injection. Harms associated with amphetamine use vary with the specific drug in question but range from serious physical and mental effects (stroke, seizures, myocardial infarction, psychosis) to consequences of behaviors associated with use including injection and high-risk sexual behaviors

(DeSandre, 2006). Harm reduction techniques for amphetamine use are tailored to the drug used as well as the population of users and circumstances surrounding use (Marlatt et al., 2012).

One of the prominent issues with MDMA (commonly known as Ecstasy) in particular is the unpredictability of drug contents when purchased on the street. While there is always the potential for the presence of a number of different "fillers," the dose and even chemical composition of active substance found in different preparations can vary substantially (Cole et al., 2002). Efforts to assess drug content have been proposed as a harm reduction strategy. Test kits can be purchased or even found at venues commonly associated with amphetamine use. Unfortunately, while such kits can detect the presence of MDMA, their utility in determining dose and other pill components is quite limited (Marlatt et al., 2012).

Harm reduction efforts regarding sexual risk associated with methamphetamine use have targeted men who have sex with men (MSM). Use of methamphetamine during sex has been associated with high-risk sexual behaviors across other subgroups, although the practice of pairing use with sexual behavior ("party and play," or PNP) is well established in some MSM communities (Molitor et al., 1998). Harm reduction strategies, including education, condom distribution, needle exchange, and sexually transmitted infection testing, are likely to be effective at reducing harms in this setting (Marlatt et al., 2012).

Finally, substitution therapy with prescribed pharmaceutical amphetamines has been attempted as a harm reduction approach. Particularly in the setting of high-risk amphetamine use (injectors), research investigating substitution therapy with oral dexamphetamine has shown potential for positive outcomes including reductions in amount and frequency of injection amphetamine use (Shearer et al., 2001). Substitution therapy is not widely used in clinical substance abuse treatment settings.

Opiates

Opiates—also commonly called narcotics—are a class of drugs that interact with the human opioid receptors. Opiates are widely used for analgesia, and some agents also have indications for cough suppression and severe diarrhea (DEA, 2005). In addition to analgesia, opiates cause sedation, euphoria, and respiratory depression. Cessation after chronic use can produce severe, uncomfortable symptoms of withdrawal (NIDA, 2005). These properties, combined with the high prevalence of both acute and chronic pain disorders for which opiates may be prescribed, contribute to the high rates of abuse that are seen with this class of drugs.

Illicit use of opiates spans a wide range of behaviors and patterns, from the misuse of prescription pain medication to intravenous heroin use. Intravenous heroin use carries the risks common to all intravenous drug use (blood-borne viral transmission and other infectious complications) as well as potential for fatal overdose given significant variation in drug concentration. Nonmedical use of prescription opiates, however, also carries significant risk. Users often modify prescription drugs in ways that were not intended by the prescriber, including converting pill formulations into powders for snorting or liquids for intravenous injection. These practices, together with simultaneous use of other CNS depressant drugs

(alcohol, benzodiazepines, heroin), increase the potential for harm, including overdose (Marlatt et al., 2012). Opiates are commonly implicated in drug-related emergency department visits, and opiate misuse is the driver for a significant economic burden to society (Strassels, 2009).

Opiates have proved to be the most amenable of the drugs of abuse to harm reduction interventions based on pharmacologic substitutions. Substitution-based therapies are based on the premise that by providing dependent individuals with a less harmful alternative under carefully supervised conditions, withdrawal symptoms will be better controlled, and patients will be equipped to engage in treatment, avoid illicit substance use, and build more productive and rewarding lives. Indeed, methadone maintenance programs have been shown to have better treatment retention rates than abstinence-oriented interventions (Tapert et al., 1998). Methadone maintenance programs have been shown to be effective in decreasing rates of intravenous drug use, decreasing needle sharing, decreasing criminal activity, and increasing productivity among participants (Maddux & Desmond, 1997).

Methadone and buprenorphine are comparable strategies for maintaining opiate-dependent patients. Nevertheless, there are differences. Methadone and buprenorphine (commonly prescribed in a formulation combined with naloxone to discourage intravenous use) are dosed daily and appear to be comparable in both efficacy and client satisfaction (Marlatt et al., 2012). Additionally, there has not been a standard established for maintenance therapy programs. The adjunctive services available to individuals through different maintenance programs may vary substantially, thus affecting outcomes. Nevertheless, the literature clearly shows that maintenance programs are effective in reducing opiate-related harm in large part by retaining clients in therapy even despite setbacks.

NSEPs are an important aspect of a harm reduction approach to all intravenous drug use, including opiates. These programs arose as an important public health innovation in the wake of the AIDS epidemic in an effort to curb transmission of blood-borne viruses spread by sharing of needles, syringes, and other paraphernalia of intravenous drug use (Drucker et al., 1998). In addition to reducing the amount of time any particular needle or syringe circulates, NSEPs provide an important opportunity of interface between often-marginalized intravenous drug users and medical, social, and legal service providers. Thus, in addition to the actual exchange of needles and other intravenous drug paraphernalia, NSEPs are crucial to educating, engaging, and caring for intravenous drug users.

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Harm Reduction Practices for High-risk Sexual Behaviors and Human Immunodeficiency Virus

Four percent of the estimated 56,300 new HIV infections each year have occurred among MSM who also inject drugs. In addition, many infections have occurred among MSM who use noninjection drugs such as methamphetamine, and such activity is frequently associated with high-risk sexual behaviors (Ostrow et al., 2009). Moreover, substance abusers remain an active source of new HIV cases through high-risk behavior (Abdala et al., 2010; Santos et al., 2011). As targeted practices have been developed to address and reduce harms associated with high-risk drug use, a similar framework has evolved to address high-risk sexual behaviors. The fundamental strategies for preventing HIV transmission through sexual contact—abstinence, monogamy, and condom use—are highly effective. Nevertheless, for those individuals most vulnerable to HIV, these strategies are often not utilized. This is reflected in the rising rate of new HIV infections, particularly within marginalized social groups, including MSM and women of color, despite the existence of highly effective prevention strategies. Harm reduction with regard to sexual behavior recognizes the rich complexity of variables that influence the degree of risk that may be involved within a particular sexual encounter, and harness the concept of relative risk in order to modify sexual risk through the preferential use of lower risk behaviors.

Reducing the risk for sexually transmitted HIV begins with gaining knowledge of one's HIV serostatus through testing. There are data to suggest that HIV-positive individuals who know their status are more likely to engage in practices to reduce the risk for transmission to their sexual partners (Parsons et al., 2005). Indeed, the rationale supporting Centers for Disease Control and Prevention (CDC) recommendations for routine HIV screening is premised on the notion that offering treatment to HIV-infected individuals can prevent the development of opportunistic infections in those with HIV and may also reduce the likelihood of continued transmission through control of viremia, education, and behavioral modification (Branson et al., 2006). Thus, increasing availability and implementation of HIV testing services within a variety of health care settings can have important effects on both primary and secondary prevention.

The consistent use of latex condoms has proved highly effective in reduction of HIV transmission. Condoms act as a barrier, preventing exchange of semen and direct contact between fluids and mucous membranes that can result in viral transmission. Availability of condoms and other barrier devices such as dental dams may be limited in some settings, leading to decreased use. Making such items available to high-risk individuals free of cost may increase their use. Still, there appear to be many factors outside of cost and availability that lead to the underutilization of effective protection of HIV transmission.

Epidemiological data have shown a trend toward higher rates of intentional unprotected anal sex among MSM since the latter half of the 1990s

(Marlatt et al., 2012). The social, cultural, and psychological factors underlying the phenomena are quite complex. It is not difficult to see how prevention programs that emphasize only condom use and HIV education will be ineffective strategies to reduce harm within the setting of men knowingly engaging in sexual activity that puts them at high risk for HIV transmission. Similar to the way harm is conceptualized with regard to drug use, a harm reduction approach views sexual risk-taking behaviors along a continuum, with abstinence at one end and unprotected anal intercourse at the other. Harm reduction techniques provide pragmatic ways to reduce the risk for HIV transmission associated with a given sexual encounter, while still acknowledging that risk may remain.

Advocating for sexual harm reduction behaviors has been controversial because the associated risk of these behaviors is often still significant. Nevertheless, the central harm reduction principle of autonomy posits that people will make their own decisions regarding sexual risk taking. Risk reduction techniques facilitate nonjudgmental discussion about risk and thus may result in movement along the continuum toward safer sex practices and decreased HIV transmission (Marlatt et al., 2012). If unprotected anal intercourse is associated with the highest risk for HIV transmission, it can be seen how other sex acts—including oral sex or mutual masturbation—can be conceptualized as less risky. Limiting the exchange of potentially infectious fluids and engaging in noninsertive sexual acts are important ways to attain sexual satisfaction with minimal risk. Yet even within the context of unprotected anal sex, risk for viral transmission can be modified by a number of factors, including partner status (regular vs. casual), HIV status, sexual positioning (insertive vs. receptive), and degree of fluid exchange (Marlatt et al., 2012). Sexual harm reduction techniques involve making active choices regarding these factors in an effort to reduce risk for viral exposure and transmission.

Serosorting is a technique used to decrease the risk for HIV transmission through partner selection. Serosorting refers to the practice of having sex only with people concordant with one's own HIV infection status. The effectiveness of serosorting as a harm reduction strategy depends on accurate knowledge and honest disclosure of HIV status. CDC data suggest that up to 44% of MSM testing positive for HIV were not aware of their infection at the time of testing (CDC, 2009). Thus, the potential for inaccurate sorting and resultant HIV transmission is high. Among HIV-positive men, there is concern that serosorting may promote HIV superinfection and contribute to drug resistance. There is also the potential to spread other sexually transmitted infections. Nevertheless, serosorting as a harm reduction strategy may encourage regular testing and knowledge of one's HIV status as well as facilitate discussions between partners about HIV and risk reduction. There is evidence to suggest that serosorting is already widely practiced amongst MSM despite clear data regarding its effectiveness in reducing HIV transmission (Parsons et al., 2005).

Another harm reduction strategy used amongst MSM involves strategic positioning. Because the receptive partner in anal sex faces a greater risk for HIV transmission, strategic positioning places known positive individuals in the receptive position. The negative or unknown partner will be insertive and thus at decreased risk for HIV transmission. Following a

similar logic, withdrawal before ejaculation can be used to limit exchange of potentially infectious semen. There are data to suggest that some MSM use the viral load status of their partners to make decisions regarding sexual positioning and withdrawal. Indeed, high viral load is associated with higher risk for transmission, although it has been established that HIV transmission is possible even when viral load is undetectable (Marlatt et al., 2012).

Finally, in addition to behavioral sexual harm reduction techniques, recent years have seen the emergence of pharmacologically based harm reduction. Antimicrobial topical preparations for use in the vagina or rectum before sexual intercourse are currently under investigation for their efficacy in preventing HIV transmission in women. Unlike condoms, women could use this type of prevention strategy without the knowledge of their sexual partners. This is crucial given the vulnerability of women globally to disempowerment and sexual violence, factors important to the spread of HIV transmission within this particular group. Additionally, there is some evidence to support the daily use of oral antiretrovirals as pre-exposure prophylaxis (PrEP) in high-risk groups. PrEP is not intended to be used as a stand-alone method and may only be appropriate in carefully selected patients (CDC, 2009). Further investigation into the long-term safety and efficacy of these methods may result in more widespread use as harm reduction techniques.

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Online Resources List for Substance Use Disorders and Co-occurring Disorders

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Table of Contents

1. Mutual Support Organizations

2. Organizations for Professionals

1. Mutual Support Organizations

Organization/Contact Information	Purpose	Components
1) Adult Children of Alcoholics Phone 562–595-7831 http://www.adultchildren.org	• Adult Children of Alcoholics is an anonymous *12-Step*, *12-Tradition* program of women and men who grew up in an alcoholic or otherwise dysfunctional home. • We meet with each other in a mutually respectful, safe environment and acknowledge our common experiences. We discover how childhood affected us in the past and influences us in the present. We take positive action. • By practicing the *12 Steps*, focusing on *The Solution*, and accepting a loving Higher Power of our understanding, we find freedom from the past and a way to improve our lives today.	• Group meetings • Telephone meetings • Online meetings/chat • Online forums • Written materials
2) Al-Anon and Ala-Teen http://www.al-anon.alateen.org/ 1–888-425–2666 Western Pennsylvania Meetings: Phone: 800–628-8920 http://www.pa-al-anon.org/	• Since its founding in 1951, these have shared a single purpose: to help family and friends recover from the effects of someone else's drinking. • Members share their personal experiences and stories, and invite other members to "take what they like and leave the rest"—that is, to decide for themselves what lesson they could apply to their own lives. • The best place to learn how Al-Anon works is at a local meeting • Personal contact is an important element in the healing process. • Web page selections give encouragement to visit your first meeting. • Newcomers are often interested in learning from members whose personal situations most closely resemble theirs. • After attending Al-Anon meetings, they begin to understand how much they have in common with everyone affected by someone else's drinking, regardless of the specific details of their personal situation.	• Support for spouses and partners, adult children of alcoholics, teens, parents, grandparents, and siblings affected by someone else's drinking. • Face-to-face meetings • Online and telephone meetings (call 1–800-628–8920)

(*continued*)

1. Mutual Support Organizations (Continued)

Organization/Contact Information	Purpose	Components
3) Alcoholics Anonymous (AA) http://www.aa.org/ **A.A. World Services, Inc.,** 11th Floor 475 Riverside Dr. at West 120th St. New York, NY 10115 (212) 870-3400	• Alcoholics Anonymous is a fellowship of men and women who share their experience, strength and hope to solve their common problem and help others to recover from alcoholism. • The only requirement for membership is a desire to stop drinking. • There are no dues or fees for AA membership; we are self-supporting through our own contributions. • AA is not allied with any sect, denomination, politics, organization, or institution; does not wish to engage in any controversy; neither endorses nor opposes any causes. • Our primary purpose is to stay sober and help other alcoholics to achieve sobriety.	• Regularly scheduled local community meetings • Sponsors • 12-Step programs • Books/pamphlets, videos, and periodicals related to recovery • Opportunities for service • Recovery events
4) Alcoholics for Christ www.alcoholicsforchrist.com Email: office@alcoholicsforchrist.com Telephone: 248-399-9955 Fax: 248-399-1099 Address: 1316 N. Campbell Rd. Royal Oak, MI 48067	• AC is an interdenominational, nonprofit, Christian fellowship that ministers to 3 groups: substance abusers, family members, and adult children raised in alcoholic, substance abuse, or dysfunctional families. • AC ministries is dedicated to the propagation of the gospel of Jesus Christ, as well as sharing His burden for the lost and hurting individuals. • This fellowship uses the Word of God as its primary source of direction. • Our chief goal is to direct and restore the alcoholic or substance abuser, the family member, and the adult child to a sincere and dedicated relationship with Jesus Christ. • We encourage that persons stay active in their local A/C, AA, NA, ACOA, or other support group and continue to worship within their own body of believers.	• Face-to-face meetings • Newsletters • Children and family programs • Prison/jail ministries

5) Alcoholics Victorious (AV) http://www.alcoholicsvictorious.org phone: 816-561-0567	• AV is a network of Christian support groups for addicted persons. We believe that alcoholism is an addiction, and that the alcoholic is an individual who cannot, as a matter of will power alone, control the dependency. • Some groups also sponsor meetings for the spouses and concerned friends of addicts. • We are devoted to: support and education about addictive problems, reconciliation to GOD and family, and encouragement and support of one another through fellowship in recovery. • In AV meetings, both the *12 Steps* and the *Alcoholics Victorious Creed* are used.	• Community Christian support group meetings • Use of 12 Steps and Alcoholics Victorious Creed • Some meetings held to benefit family and friends of addicts
6) Celebrate Recovery http://www.celebraterecovery.com email: info@celebraterecovery.com	• A Christ-centered recovery program: Over 700,000 people have gone through the Celebrate Recovery program in more than 17,000 churches worldwide. • Celebrate Recovery is a program designed to help those struggling with hurts, hang-ups, and habits by showing them the loving power of Jesus Christ through the recovery process.	• Christ-centered recovery program • Use of 8 Recovery Principles, "The Road to Recovery" based on the Beatitudes • Use of "Life's Healing Choices in Step Studies"

(*continued*)

1. Mutual Support Organizations (Continued)

Organization/Contact Information	Purpose	Components
7) Cocaine Anonymous (CA) http://www.ca.org/ **W. Pennsylvania Contact:** Phone: Tom 412-874-0667 http://www.caofpa.org	• CA is concerned solely with the personal recovery and continued sobriety of individual drug addicts who turn to our Fellowship for help. • CA is open to all persons who state a desire to stop using cocaine, including *"crack"* cocaine, as well as *all other mind-altering substances.* • There are no dues or fees for membership. Our expenses are supported by the voluntary contributions of our members — we respectfully decline all outside contributions. We are not allied with any sect, denomination, politics, organization, or institution. • Like AA (with which we are not affiliated), we use the *12 Step* recovery method, which involves service to others as a path toward recovery from addiction. • We feel that one addict talking to another can provide a level of mutual understanding and fellowship that is hard to obtain through other methods. • We hold *regular meetings* to further this fellowship and to allow new members to find us and, perhaps, the answers they seek.	• Regularly scheduled meetings • Focus on 12-Step philosophy • Reading materials related to addiction and recovery

8) Crystal Meth Anonymous (CMA) **http://www.crystalmeth.org** 4470 W. Sunset Blvd, Suite 107 PMB 555 Los Angeles, CA 90027-6302 Phone: 213-488-4455	• CMA is a fellowship of men and women who share their experience, strength, and hope with each other so that they may solve their common problem and help others to recover from addiction to crystal meth. • The only requirement for membership is a desire to stop using. • There are no dues or fees for CMA membership; we are self-supporting through our own contributions. • CMA is not allied with any sect, denomination, politics, organization, or institution; does not wish to engage in any controversy; and neither endorses nor opposes any causes. • Our primary purpose is to lead a sober life and to carry the message of recovery to the crystal meth addict who still suffers.	• 12 Steps and 12 Traditions • Regularly scheduled meetings in selected areas of the country • Sponsors • Literature and readings
9) Double Trouble in Recovery http://www.bhevolution.org/public/doubletroubleinrecovery Double Trouble in Recovery c/o MH Empowerment Project 271 Central Ave, Albany NY 12209 518-434-1393 MyIndependentLiving.org (meeting list not available)	• DTR is designed to meet the needs of the dually diagnosed and is clearly for those having addictive substance problems as well as having been diagnosed with a psychiatric disorder. • DTR follows a 12-Step approach to recovery. • Working the DTR 12 Steps and regular attendance at DTR and other appropriate self-help groups will help us gain the rewards of sanity, serenity, and freedom from addictions. • There are no dues or fees for DTR membership; they are self-supporting through contributions.	• 12-Step based • Recovery group meetings • Online access to reading materials, pamphlets, etc. related to dual diagnosis and recovery

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1. Mutual Support Organizations (Continued)

Organization/Contact Information	Purpose	Components
10) Dual Recovery Anonymous (DRA) **http://draonline.org/dual_diagnosis.html** Dual Recovery Anonymous World Network Central Office P.O. Box 8107, Prairie Village, Kansas, 66208 E-mail: draws@draonline.org Phone: 913-991-2703 (9-5 Central)	• DRA is a 12-Step program for individuals who experience both addiction and an emotional or psychiatric illness. Men and women who currently use psychiatric medications under a doctor's care, or who have done so in the past, are welcome to participate. • The primary purpose of DRA is to help one another achieve dual recovery, to prevent relapse, and to carry the message of recovery to others who experience dual disorders. • DRA has two requirements for membership: a desire to stop using alcohol and other intoxicating drugs, and a desire to manage our emotional or psychiatric illness in a healthy and constructive way. • DRA is a nonprofessional self-help program. The DRA fellowship has no opinion on matters of diagnosis, treatment, medication, or other issues related to the health care professions.	• Group meetings • Follows 12-steps and 12-traditions • Bookstore, DD-related downloads, etc. • Sponsors
11) Emotions Anonymous (EA) PO Box 4245 St. Paul, MN 55104-0245 651-647-9712 www.emotionsanonymous.org	• EA is a 12-Step organization, similar to AA. • Our fellowship is composed of people who come together in weekly meetings for the purpose of working toward recovery from emotional difficulties. • EA members are from many walks of life and are of diverse ages, economic status, and social and educational backgrounds. • The only requirement for membership is a desire to become well emotionally.	• EA book, which features writings on the Steps and personal recovery stories, our daily meditation book *Today*, and program-approved literature. • Weekly face-to-face meetings • Online discussion

12) Families Anonymous (FA) PO Box 3475 Culver City, CA 90231-3475 800-736-9805 www.familiesanonymous.org	• FA is a 12-Step fellowship for the families and friends who have known a feeling of desperation concerning the destructive behavior of someone very near to them, whether caused by drugs, alcohol, or related behavioral problems. • When you come into our rooms you are no longer alone, but among friends who have experienced similar problems. • Any concerned person is encouraged to attend our meetings, even if there is only a suspicion of a problem.	• Online Meeting Without Walls group • National and international face-to-face meetings • Literature, CDs, group materials available online
13) Gamblers Anonymous (GA) International Service Office PO Box 17173 Los Angeles, CA 90017 213-386-8789 www.gamblersanonymous.org	• GA is a fellowship of men and women who share their experience, strength and hope with each other that they may solve their common problem and help others to recover from a gambling problem. • The only requirement for membership is a desire to stop gambling. • There are no dues or fees for Gamblers Anonymous membership; we are self-supporting through our own contributions. • Gamblers Anonymous is not allied with any sect, denomination, politics, organization, or institution; does not wish to engage in any controversy; neither endorses nor opposes any cause. Our primary purpose is to stop gambling and to help other compulsive gamblers do the same.	• 12-Step program • U.S. face-to-face meetings • U.S. hotlines • Intergroup mail addresses • Gam-Anon help for family and friends • Sponsors

(*continued*)

1. Mutual Support Organizations (Continued)

Organization/Contact Information	Purpose	Components
14) LifeRing Secular Recovery (LSR) http://lifering.org/ LifeRing Service Center 1440 Broadway, Suite 312 Oakland, CA 94612-2023	• The "3-S" Philosophy: "3-S" is short-hand for the fundamental principles of LifeRing: Sobriety, Secularity, and Self-Help. • Sobriety. In LifeRing it always means abstinence. • The basic membership requirement is a desire to remain abstinent from alcohol and "drugs." • LifeRing welcomes people regardless of their "drug of choice." • Secularity. LifeRing Recovery welcomes people of all faiths and none. • You get to keep whatever religious beliefs you have, and you are under no pressure to acquire any if you don't. • Participants' spiritual or religious beliefs or lack thereof remain private. • Self-help in LifeRing means that the key to recovery is the individual's own motivation and effort. • The main purpose of the group process is to reinforce the individual's own inner strivings to stay clean and sober. • LifeRing is a permanent workshop where individuals can build their own Personal Recovery Plans.	• Face-to-face meetings • Practice the "Sobriety Priority" • On-line forums

15) Men for Sobriety (MFS) PO Box 618 Quakertown, PA 18951-0618 Phone: 215-536-8026 Fax: 215-538-9026 http://womenforsobriety.org/beta2/ Men's brochure: http://www.womenforsobriety.org/Brochure/Brochure-%20Men%20&%20Addictions.pdf	• MFS is a non-profit organization dedicated to helping men overcome alcoholism and other addictions. • Our *"New Life" Program* helps achieve sobriety and sustain ongoing recovery. • MFS is based on a *13-Statement Program* of positivity that encourages emotional and spiritual growth. Note: Men's Groups in Canada Only	• Men's sobriety programs (access thru WFS website) • Self-help meetings • 13-Statement program of positivity
16) Methadone Anonymous (MA) (AFIRM: Advocates for the Integration of Recovery and Methadone, Inc) http://www.methadoneanonymous.org/	• AFIRM is a group of methadone maintenance treatment providers, consumers, and other interested parties. We support methadone maintenance as treatment and as an effective tool of recovery. • We believe that methadone is a successful form of treatment that can be enhanced by the integration of other treatment approaches. • Our mission includes the education and training of health providers and the community regarding the benefits of methadone treatment. • We promote the development and proliferation of MA and other 12-Step fellowships, clinical treatment alternatives, public relations initiatives, and other political advocacy.	• Community/consumer advocates

(*continued*)

1. Mutual Support Organizations (Continued)

Organization/Contact Information	Purpose	Components
17) Methadone Support (MSO) http://www.methadonesupport.org/	• A nonprofit support organization/website for "Medication Assisted Treatment" (MAT)…. those addicted or dependent on opiates for any reason, from substance abuse to chronic pain. • A 12-step fellowship that gives support to those on MAT, a member of the Center for Substance Abuse Treatment (CSAT) Patient Support and Community Education Project (PSCEP), and focus on the basic needs and rights of both patients and providers.	• Group meetings • Online forums • Publications
18) National Association for Children of Alcoholics (NACoA) Phone 888-554-2627 301-468-0985 http://www.nacoa.org	• NACoA believes that none of these vulnerable children should grow up in isolation and without support. • A national nonprofit organization working on behalf of children of alcohol- and drug-dependent parents. • Our mission is to eliminate the adverse impact of alcohol and drug use on children and families: ✓We work to raise public awareness. ✓We provide leadership in public policy at the national, state, and local levels. ✓We advocate for appropriate, effective, and accessible education and prevention services. ✓We facilitate and advance professional knowledge and understanding.	• Periodic online and print newsletters • Videos, booklets, posters, educational materials • Send information packets to all who ask • Maintain a toll-free phone available to all

19) National Alliance For Medication-Assisted Recovery (NAMA Recovery) http://www.methadone.org Phone: 212-595-6262	• An organization composed of medication-assisted treatment patients and health care professionals who are supporters of quality opiate agonist treatment. • The primary objective is to advocate for the patient in treatment by destigmatizing and empowering medication-assisted treatment patients. • We confront the negative stereotypes that affect the self-esteem and worth of many medication-assisted treatment patients with a powerful affirmation of pride and unity.	• Function as consumer advocates
20) Nar-Anon Family Groups http://nar-anon.org Nar-Anon Family Group HQ 22527 Crenshaw Blvd #200B Torrance, CA 90505 310-534-8188 or 800-477-6291 For info about online meetings: http://nar-anon.org	• A worldwide fellowship for those affected by someone else's addiction. • A 12-Step program designed to help relatives and friends of addicts recover from the effects of living with an addicted relative or friend. • The only requirement is that there is a problem of drugs or addiction in a relative or friend. • Not affiliated with any other organization or outside entity. • Whether the addict is using or not, Nar-Anon offers hope and recovery to all people affected by the addiction of a loved one or friend.	• Nar-Anon groups hold meetings in the United States, Canada, and worldwide. • Literature and other materials are available at Nar-Anon meetings. • Use Nar-Anon's 12 Steps and 12 Traditions

(*continued*)

1. Mutual Support Organizations (Continued)

Organization/Contact Information	Purpose	Components
21) Narcotics Anonymous (NA) http://www.na.org/ **NA Main Office** PO Box 9999 Van Nuys, California 91409 Telephone (818) 773-9999 Fax (818) 700-0700	• NA is a nonprofit fellowship or society of men and women for whom drugs have become a major problem. • We are recovering addicts who meet regularly to help each other stay clean. • The 12 Steps of NA are the basis of our recovery program. • NA gives members a place to share recovery with other addicts. • If you are not an addict, look for an open meeting, which welcomes nonaddicts. • Discussion meetings allow members to take turns sharing. • Speaker meetings allow one or more members to share for an extended period of time.	• 12-Step program • Regularly scheduled meetings • Regional 24-hour helpline • Resources and literature related to narcotics addiction • Sponsors
22) Overcomers Outreach (OO) http://overcomersoutreach.org/ 12828 Acheson Drive Whittier, CA 90601 1–800-310-3001 Phone: 562-698-9000 Fax: 562-698-2211 Email: info@overcomersoutreach.org	• An international network of Christ-centered 12-Step support groups which ministers to individuals, their families, and their loved ones who suffer from the consequences of any addictive behavior. • We exist to serve as a bridge between traditional 12-Step recovery groups and churches of all denominations. • We recover together as we meet to study and grow in God's Word. • Our ministry is all-welcoming, regardless of age, race, lifestyle, background, or belief.	• Support groups using the 12 Steps and scriptures • Groups are structured to be sharing groups, not therapy groups

23) SMART Recovery http://www.smartrecovery.org/ 7537 Mentor Ave, Suite 306 Mentor, OH 44060 Phone: 440-951-5357 Toll Free: 866-951-5357 Fax: 440-951-5358	• SMART Recovery is the leading self-empowering addiction recovery support group. • Participants learn tools for addiction recovery based on the latest scientific research and participate in a worldwide community that includes free, self-empowering, science-based mutual help groups. • The SMART Recovery 4-Point Program helps people recover from all types of addiction and addictive behaviors, including: drug abuse, drug addiction, substance abuse, alcohol abuse, gambling addiction, cocaine addiction, and addiction to other substances and activities. • SMART Recovery sponsors *face-to-face meetings around the world*, and *daily online meetings*. Our *online message board* and 24/7 chat room offer excellent recovery forums.	• Face-to-face meetings • Daily online meetings • Online message board • Publications
24) Secular Organizations for Sobriety (SOS) http://www.cfiwest.org 4773 Hollywood Blvd. Hollywood, Ca 90027 USA Phone (323) 666-4295 Fax (323) 666-4271 Email: sos[at]cfiwest.org	• An alternative recovery method for alcoholics or drug addicts who are uncomfortable with the spiritual content of 12-Step programs. • SOS takes a reasonable, secular approach to recovery and maintains that sobriety is a separate issue from religion or spirituality. • SOS credits the individual for achieving and maintaining sobriety, without reliance on any "Higher Power." • SOS respects recovery in any form regardless of the path used • SOS supports healthy skepticism and encourages the use of the scientific method to understand alcoholism. • SOS is a nonprofit network of autonomous, nonprofessional local groups dedicated to helping individuals achieve and maintain sobriety.	• Nonreligious alternative to 12-Step • State-wide group meetings • E-group meetings • Quarterly newsletter • Scheduled special events

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1. Mutual Support Organizations (Continued)

Organization/Contact Information	Purpose	Components
25) Women for Sobriety (WFS) PO Box 618 Quakertown, PA 18951-0618 Phone: 215-536-8026 Fax: 215-538-9026 http://womenforsobriety.org/beta2/	• A nonprofit organization dedicated to helping women overcome alcoholism and other addictions. It is, in fact, the first national self-help program for women alcoholics. • Our *"New Life" Program* helps achieve sobriety and sustain ongoing recovery. • WFS has been providing services to women alcoholics since July 1976. • This program grew out of one woman's search for sobriety. • WFS self-help groups are found all across this country and abroad. Based on a *13-Statement Program* of positivity that encourages emotional and spiritual growth, the "New Life" Program has been extremely effective in helping women overcome their addictions and embrace a new positive lifestyle.	• Sobriety programs • Self-help meetings • 13-Statement program of positivity

2. Organizations for Professionals

Organization/Contact Information	Purpose	Components
1) American Academy of Addiction Psychiatry (AAAP) www.aaap.org/	• AAAP is an international professional membership organization of psychiatrists, faculty at various academic institutions, medical students, residents and fellows, and related health professionals making a contribution to the field of addiction psychiatry.	• Promote high-quality treatment for all • Educate the public to influence public policy • Provide continuing education for addiction professionals • Encourage research on the etiology, prevention, identification, and treatment of addiction
2) American Association for the Treatment of Opioid Dependence (AATOD) www.aatod.org/	• AATOD was founded in 1984 to enhance the quality of patient care in treatment programs by promoting the growth and development of comprehensive opioid treatment services throughout the United States.	• Promote the growth and development of opioid treatment services • Support programs and services related to prevention of substance abuse • Advise members as to changes in applicable laws and advancements in opioid treatment

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2. Organizations for Professionals (Continued)

Organization/Contact Information	Purpose	Components
3) American Society of Addiction Medicine (ASAM) www.asam.org	• ASAM is a professional society representing physicians dedicated to increasing access and improving quality of addiction treatment, educating physicians and the public, supporting research and prevention, and promoting the appropriate role of physicians in the care of patients with addictions.	• Increase access to and quality of addiction treatment • Educate physicians, other health care providers, and the public • Support research and prevention • Promote the appropriate role of the physician in the care of patients with addiction
4) Center for Substance Abuse Prevention/ SAMHSA (CSAP) www.samhsa/.gov/centers/csap/csap.html	• CSAP provides national leadership in the federal effort to prevent alcohol, tobacco, and other drug problems. To help Americans lead healthier and longer lives, CSAP promotes a structured, community-based approach to substance abuse prevention through the Strategic Prevent Framework (SPF).	• Promote youth development • Reduce risk-taking behaviors • Build assets and resilience • Prevent problem behaviors across individuals' life spans

5) Center for Substance Abuse Treatment/ SAMHSA (CSAT) www.samhsa.gov/centers/csat/csat/html	• CSAT promotes the quality and availability of community-based substance abuse treatment services for individuals and families who need them. • CSAT works with states and community-based groups to improve and expand existing substance abuse treatment services under the Substance Abuse Prevention and Treatment Block Grant Program. • CSAT also supports SAMHSA's free treatment referral service to link people with the community-based substance abuse services they need.	• Initiatives and programs based on research findings and the general consensus of experts in the addiction field • Promote the idea that treatment and recovery work best in a community-based, coordinated system of comprehensive services • Support the nation's effort to provide multiple treatment modalities, evaluate treatment effectiveness, and use results to enhance treatment and recovery approaches
6) Children of Alcoholics Foundation (COAF) www.coaf.org	• COAF's mission is to help children of all ages from alcoholic and substance-abusing families reach their full potential by breaking the cycle of parental substance abuse and reducing the pain and problems that result from parental addiction. COAF is a national nonprofit that provides a range of educational materials and services to help professionals, children, and adults	• Develops curriculum and other educational materials • Writes reports, provides information about parental substance abuse for the general public • Trains professionals • Promotes research

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2. Organizations for Professionals (Continued)

Organization/Contact Information	Purpose	Components
7) College on Problems of Drug Dependency (CPDD) www.cpdd.vcu.edu For Information contact: Martin W. Adler, PhD Center for Substance Abuse Research Temple University School of Medicine 3400 North Broad Street Philadelphia, PA 19140-5104 Phone: 215-707-3242 Fax: 215-707-1904 Email: baldeagl@temple.edu	• CPDD is the longest standing group in the U.S. addressing problems of drug dependence and abuse. • CPDD functions as an independent body affiliated with other scientific and professional societies representing various disciplines concerned with problems of drug dependence and abuse. • CPDD has over 700 members and serves as an interface among governmental, industrial, and academic communities maintaining liaisons with regulatory and research agencies as well as educational, treatment, and prevention facilities in the drug abuse field.	• Annual scientific meeting • Special conferences on topics of interest • Sponsors of the journal, *Drug and Alcohol Dependence* • Timely policy statements and fact sheets available through website

8) National Assoc. of Addiction Treatment Providers (NAATP) www.naatp.org	• NAATP promotes, assists, and enhances the delivery of ethical, effective, research-based treatment for alcoholism and other drug addictions by providing its members and the public with accurate, responsible information and other resources related to the treatment of these diseases. • Advocates for increased access to and availability of quality treatment for those who suffer from alcoholism and other drug addictions. • Works in partnership with other organizations and individuals that share NAATP's mission and goals.	• Represents nearly 275 providers • Has acted as the voice of private treatment programs throughout the U.S., including Congress, in the insurance industry, in the utilization review arena, and in the treatment field
9) National Clearinghouse for Alcohol and Drug Information https://preventionplatform.samhsa.gov/	• SAMHSA's NCADI is a one-stop resource for information about substance abuse problems. NCADI's public library has more than 80,000 journals, newspapers, magazines, and reference books, plus equipment for reviewing audiotapes and videotapes. • The clearinghouse also provides access to 11 computer data bases, including the Educational Resources Information Center (ERIC) of the U.S. Department of Education, the ETOH data base of the National Institute on Alcohol Abuse and Alcoholism, and the bibliographic data base of the Centers for Disease Control and Prevention's Office on Smoking and Health. • NCADI's own Prevention Materials Data Base lists more than 8,000 prevention products, such as curricula, videocassettes, posters, brochures, specialty items, and educational material.	• About 1,000 downloadable text and graphic files concerning substance abuse prevention • Access to information specialists • Public forums for posting questions and comments • Online access to CSAP-developed training courses for professionals and the public

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2. Organizations for Professionals **(Continued)**

Organization/Contact Information	Purpose	Components
10) National Institute On Alcohol Abuse and Alcoholism (NIAAA) www.niaaa.nih.gov	• NIAAA conducts and supports research in a wide range of scientific areas including genetics, neuroscience, epidemiology, health risks and benefits of alcohol consumption, prevention, and treatment • Coordinates and collaborates with other research institutes and federal programs on alcohol-related issues • Collaborates with international, national, state, and local institutions, organizations, agencies, and programs engaged in alcohol-related work • Translates and disseminates research findings to health care providers, researchers, policymakers, and the public **NIAAA's webpage provides**: • Most recent NIAAA news releases and advisories, exhibit schedules, and alcohol research updates • Access to publications, including *Alcohol Alert*, *Alcohol Research & Health*, newsletters, pamphlets, professional education manuals • Access to data base resources and statistical tables, related websites, research guidelines, and resources • Access to extramural and intramural research conducted at NIAAA • Clinical trials information for patients, physicians, and NIAAA studies seeking patients	• Basic research on medications development for alcohol use disorders • Genetic studies of vulnerability to alcohol • Long-term, community-based prevention of alcohol problems at specific life stages • Multisite, collaborative initiative on fetal alcohol syndrome • Women, HIV/AIDS, and alcohol • Training the next generation of investigators • News highlights • Underage drinking research initiative

11) National Institute on Drug Abuse (NIDA) www.nida.nih.gov	• NIDA's mission is to lead the nation in bringing the power of science to bear on drug abuse and addiction. This charge has two critical components. • The first is the strategic support and conduct of research across a broad range of disciplines. • The second is ensuring the rapid and effective dissemination and use of the results of that research to significantly improve prevention and treatment and to inform policy as it relates to drug abuse and addiction. **NIDA's webpage provides**: • Extensive information on drugs, drug problems, and treatment • Updates on current research and information on funding opportunities • Information about the Clinical Trials Network national research project • Information about NIDA's AIDS research program • Information on medical and health care professionals (e.g., drug screening tools, curriculum resources) • Information relevant to the questions and concerns of patients and families • Information relevant to the needs of parents and teachers	• Drugs of abuse • Publications • Funding opportunities and information • News and events • AIDS research • Clinical Trial Network • NIDA Notes • Information on treatment research • Selected NIDA publications

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2. Organizations for Professionals (Continued)

Organization/Contact Information	Purpose	Components
12) National Organization on Fetal Alcohol Syndrome (NOFAS) www.nofas.org	• NOFAS seeks to create a global community free of alcohol-exposed pregnancies and a society supportive of individuals already living with FASD. • NOFAS effectively increases public awareness and mobilizes grassroots action in diverse communities and represents the interests of persons with FASD and their caregivers as the liaison to researchers and policymakers. • By ensuring that FASD is broadly recognized as a developmental disability, NOFAS strives to reduce the stigma and improve the quality of life for affected individuals and families.	• Communicate the significant risk and harm of prenatal alcohol exposure • Promote national policies that enhance knowledge of FASD and ensure services for families • Extend reach through partnerships and coalitions • Diversify and increase the revenue streams and resources to accomplish our mission
13) Research Society on Alcoholism (RSA) **http://www.rsoa.org** 7801 N. Lamar Blvd, Suite D89 Austin TX 78752-1038 Phone: 512-454-0022 Fax: 512-454-0812	• The RSA provides a forum for communication among researchers, who share common interests, in alcoholism. The Society's purpose is to promote research that can lead the way toward prevention and treatment of alcoholism. • Membership consists of regular scientific members, postdoctoral fellows, associate members and student members. The current membership of over 1,800 is drawn from countries throughout the world, with the majority from the U.S. • The annual scientific conference provides a meeting place for scientists and clinicians from across the country, and around the world, to interact. The meeting gives members and nonmembers the chance to present their latest findings in alcohol research through abstract and symposia submissions.	• Online resources for researchers • Education materials • Events and meetings of interest • Treatment and advocacy resources • Research grants/awards available

14) State Associations of Addictions Services www.saasnet.org	• SAAS is a nonprofit organization whose membership consists of state associations of addiction treatment and prevention providers. These associations represent programs of all sizes and treatment and prevention approaches. • SAAS is the only national organization of state alcohol and drug addiction treatment and prevention provider associations. • Through our member associations, SAAS has a direct link to thousands of prevention and treatment programs that are the core of the publicly supported addiction services system. • SAAS serves as an information broker and advocate, linking state associations with national developments such as evidence-based practices and providing input to federal organizations on the needs of community-based services providers and their clients.	• Ensure health care reform requires SUD coverage equal to that of other illnesses • Include SUD prevention and screening in health reform • Include SUD in workforce development initiatives • Increase federal funding for SUD services and research

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2. Organizations for Professionals (Continued)

Organization/Contact Information	Purpose	Components
15) Substance Abuse and Mental Health Services Admin (SAMHSA) www.samhsa.gov	• SAMHSA's mission is to reduce the impact of substance abuse and mental illness on America's communities. • In order to achieve this mission, SAMHSA has identified *8 Strategic Initiatives* to focus the Agency's work on improving lives and capitalizing on emerging opportunities. • To accomplish its work SAMHSA administers a combination of competitive, formula, and block grant programs and data collection activities. **NAMHSA's webpage provides**: • Access to major topic areas and programs covered by SAMHSA, including substance abuse & mental health prevention, treatment, recovery, grants and funding opportunities, agency administrative information, and contacts • FY 2012 grant announcements • Publications related to topics that include Children of Alcoholics, Managing Chronic Pain, Enhancing Motivation for Change in Substance Abuse Treatment, etc. • Access to the Substance Abuse and Mental Health Data Archive (SAMHDA), which allows access to the nation's preeminent substance abuse and mental health research data • Access to Uniform Reporting System (URS) output tables; other mental health statistics reports • Access to the National Registry of Evidence-Based Programs and Practices (NREPP) searchable online registry of more than 160 interventions	SAMHSA plays a unique role in advancing service delivery systems and community-wide strategies that improve health status and well-being by providing: • Leadership and voice • Funding • Surveillance and data • Public awareness and education • Regulation and oversight • Practice improvement in community-based, primary, and specialty care

16) William L White Papers **http://www.williamwhitepapers.com/**	• This site contains the full text of more than 200 articles, 7 monographs, 30+ recovery tools, 9 book chapters, 3 books, and links to an additional 13 books written by William White and coauthors over the past four decades. • The purpose of this site is to create a single location where such material may be accessed by those interested in the history of addiction treatment and recovery in the United States. • Those papers selected for inclusion contain all of the articles and monographs authored by William White on the new recovery advocacy movement, recovery management, and recovery-oriented systems of care. • It is hoped that this resource library will serve present and future generations of addiction professionals, recovery coaches, and recovery advocates.	Site offers free access to: • Papers • Books and monographs • Book reviews • Leadership interviews • Friends and favorites • Chronologies • Presentations • Recovery toolkit • RM and ROSC library • Get involved • Biographical info

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Index

A

B

C

D

E

F

G

H

N

O

P

T

U

V

W

Y

Z