
X: SUBSTANCE ABUSE

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I. SUBSTANCE ABUSE

Substance use is more prevalent in the United States than most persons realize. Statistics described in the 1998 National Household Survey on Drug Abuse (NHSDA) give the following picture on drug use in American men and women. (NHSDA, 1998) Approximately 53% of the American population will use an illegal drug in their lifetime. It is estimated from the NHSDA data that in the general population, 8.1% of males and 4.5% of women have used illegal drugs in the last month. Over the past year, 23.1 million persons Americans will have used an illegal drug. Only a fraction of drug using persons are truly drug addicted (also called drug dependent). It is estimated that there are 4.1 million people who meet the definition of drug addiction, defined as compulsively continuing drug seeking and drug using behavior even in the face of negative health consequences.

The general rates of legal drug addiction dwarf the amount of illegal drug addiction. In 1998, 113 million persons reported consuming alcohol in the last 30 days and 64 million persons consumed cigarettes. At least 43 million of the alcohol consumers are dependant on alcohol through binge or very heavy drinking. The alcohol dependant individuals are more than twice as numerous as the number of illegal drug users combined. In contrast to illegal drug use rates where twice as many men use illegal drugs than women, alcohol consumption rates are nearly equal for men (59%) and women (45%) in the general population. However, women were much less likely to be binge drinkers. Regular use of cigarettes, nicotine dependence, was nearly equal for men and women, 29.7% vs. 25.7 % respectively.

Unfortunately, the majority of substance dependant women and men, who could benefit from substance abuse, and substance abuse related emotion/psychological and health treatment never receive any form of therapeutic intervention. In 1998, 846,000 substance dependent women needed clinical health care, 1.6 million women needed emotional/psychological treatment and more than 1.7 million women needed substance abuse care. Yet only 390,000 of all three groups of women combined received any care at all.

This chapter will focus on addiction as a disease, discuss associations with a variety of comorbid conditions, review the epidemiology of substance abuse

in the United States, and outline ways to identify and treat substance abuse in women.

II. EPIDEMIOLOGY OF SUBSTANCE ABUSE

The frequency and danger of drugs and behaviors of drug use are greatly underestimated by the American public and health care professionals. The two commonly used legal drugs, alcohol and tobacco, are more frequently consumed than all the illegal drugs combined (Table 10-1). Marijuana, and cocaine (including crack cocaine) are the most frequently used illegal drugs. Inhalants are used predominately by adolescents. A more recent trend in adolescents is to use club drugs like gamma-hydroxybutyrate (GHB), Ecstasy (MDMA), Rohypnol, Ketamine, methamphetamine and LSD at all night parties called “raves” or “trances”. Surprisingly, heroin, which is viewed as a highly prevalent drug is actually one of the least favored drugs of preference in the U.S. population.

<i>DRUG</i>	<i>CURRENT USERS ESTIMATE</i>
■ Alcohol	113,000,000
■ Tobacco	64,000,000
■ Marijuana	11,000,000
■ Cocaine	2,187,000
■ Hallucinogens	1,500,000
■ Inhalants	713,000
■ Stimulants	633,000
■ Opiates	180,000

Source: Adapted from Summary from the 1998 National Household Survey on Drug Abuse, DHHS, SAMSHA.

The rates of illicit drugs used vary by slightly by ethnicity and in a major way by gender. Estimates for the gender specific drug use indicate that women are at least 50% less likely to use illicit drugs compared to males. The male to female illicit drug use rate relationship is consistent thorough out all ethnic groups (Table 10-2).

<i>AGE</i>	<i>PERCENT U.S. POPULATION</i>		
	<i>WHITE</i>	<i>HISPANIC</i>	<i>AFRICAN AMERICAN</i>
12-17	10.3	9.9	9.9
18-25	13.6	11.1	17.1
26-34	7.1	5.4	9.4
> 35	3.2	3.5	4.8
Male	7.7	7.7	12.0
Female	4.5	4.5	5.2

Source: Adapted from Summary from the 1998 National Household Survey on Drug Abuse, DHHS, SAMSHA.

However, African American males and females have higher rates of illicit drug use than White Americans and Hispanic Americans. Ethnic comparisons of drug used demonstrated that the highest rated of drug use occurs in the adolescents, aged 18-25. The males in all 3 ethnic groups are comparable though

African Americans are to be more likely to use drugs past the age of 26.

White American men and women have higher rates of alcohol use than African Americans or Hispanic Americans (Table 10-3). For all alcohol using groups, alcohol consumption is highest in adolescents. White Americans have a notably higher rate of chronic alcohol consumption after the age of 26 than Hispanic or African Americans.

TABLE 10-3: ALCOHOL USE ESTIMATES BY AGE, GENDER, AND ETHNICITY IN THE U.S.

AGE	PERCENT U.S. POPULATION		
	WHITE	HISPANIC	AFRICAN AMERICAN
12-17	20.9	18.9	13.1
18-25	65.0	50.8	50.3
26-34	65.2	53.1	54.8
> 35	56.2	47.7	38.3
Male	61.2	56.8	49.0
Female	49.2	33.6	32.3

III. CO-MORBIDITY RELATED TO SUBSTANCE ABUSE

Substance abuse is associated with a number of medical consequences, as well as co-morbid conditions. Some of these are listed in Table 10-4, and include the hepatitis's (A, B, C, D and G), sexually transmitted diseases (STD's), tuberculosis and trauma. These represent conditions associated directly and indirectly with substance use. Not only does the abuse of psychoactive substances cause a significant number of accidents, but excessive alcohol intake places users at risk for cirrhosis, malignant disease, neurological disorder, neuropathy and psychiatric disorders. Intravenous drug use is a major factor in transmission of certain infectious diseases. Smoking of drugs is the most common cause of bronchial carcinoma, other malignancies and airway diseases.

TABLE 10-4: MEDICAL CONDITIONS AND SEQUELAE ASSOCIATED WITH SUBSTANCE USE

<ul style="list-style-type: none"> ■ HIV ■ STDs ■ Tuberculosis ■ Hepatitis (A, B, C, D, and G) ■ Endocarditis ■ Alcoholism ■ Liver Disease 	<ul style="list-style-type: none"> ■ Cellulitis ■ Thrombophlebitis ■ Poor nutrition ■ Pneumonia ■ Cutaneous abscesses ■ Cognitive Dysfunction ■ Septic Embolic
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Underlying medical conditions, such as depression or other mental disorders may influence initiation or continuation of substance use ("self medicating" depression). The prolonged use of drugs in this setting can exacerbate, rather than improve these problems. Female drug users, as a group are more likely to suffer from depression and anxiety disorder than the general population, or other medical groups. The strong association between drug use and

mental health disorders is evident in environmental and genetic predisposition to addictive, impulsive and compulsive behaviors and personality disorders. A conservative estimate is that 53% of drug abusers have one or more mental health diagnoses. Successful treatment of the drug addiction is unlikely until their mental illness is treated.

The cognitive effects of drug use may result in unrecognized disease exposure. These cognitive effects include impaired decision-making or a reduced ability to understand or evaluate one's actions. Drug effects, such as disinhibition, are known to decrease compliance with safer sex precautions or drug paraphernalia hygiene. Crack use is associated with high-risk sexual behavior, other drug use, and the exchange of sex for money and/or drugs. Although IDU-related HIV transmissions is most closely associated with the sharing of injection equipment, a significant portion is related to sexual risk. Sex and drug related HIV risk behaviors are strongly associated in women. Women acquire HIV, Hepatitis B and STDs through sexual partnerships with injection drug users. Prevention intervention strategies for women at risk must include both contextual relevance (e.g. dealing with an IDU sexual partner) and real world appropriate planning like condom use strategies in the setting of drug/alcohol intoxication. Also important are treatment and prevention of co-morbid conditions like STDs and Hepatitis C, which facilitate sexual and perinatal HIV transmission.

Signs and symptoms of drug addiction, HIV and other infectious or medical diseases often overlap, complicating surveillance and early identification efforts, as well as care. Cognitive dysfunction, neuropathy, liver disease, and various infections may be caused by drug use or co-morbid conditions, complicating appropriate and timely diagnosis and management. Among IDUs, important presenting symptoms include thrombophlebitis, endocarditis, pericarditis, septic emboli, cellulitis and pneumonia.

Although women have lower rates of drug use than men, they are more likely to become infected with HIV and other infections by their own drug use habits and sexual contact with their partners. About sixty percent of AIDS cases in women are drug-related. Although minority groups constitute about 26% of the U.S. population, about half of drug-related female AIDS cases are among black women, for whom AIDS has been the leading cause of death since 1993. (Krieger, 1997) Co-morbid diseases among HIV infected drug-using women are likely to occur more often and progress more rapidly, complicating treatment. Drug use and related co-morbid conditions influence a number of other health outcomes in HIV+ women, including mortality and maternal fetal HIV transmission.

In both substance abuse treatment programs and primary care clinics, strategies are needed to identify and manage HIV and other co-morbid problems like tuberculosis, sexually transmitted diseases (STD), Hepatitis B and C, as well as mental health and social/economic problems.

Primary care providers are uniquely positioned to identify early indications of drug-use related HIV risks and signs of other comorbidities and to engage drug users in treatment at earlier stages of drug dependence. New and younger initiates to injection drug use engage in particularly high-risk behaviors for acquisition and transmission of infectious diseases and HIV. (Carneiro, 1999) In primary care settings, interventions can be put in place to prevent further transmission (Anderson, 1996) of HIV or other infections. Misconceptions about the legal, social and health implications of testing positive for HIV reduce early detection efforts, are particularly among patients at high risk. (Harvey)

IV. SUBSTANCE ABUSE IN WOMEN

Women have different risk factors for initiating drug use, require different diagnostic approaches to detect drug use and should have treatment plans and care sites which address their personal, social and familial needs. Historically however, most treatment and diagnostic paradigms for addiction treatment were based on experience in treating male users. Stigma, family circumstances, community environment and social status affect the treatment of substance abuse, especially for women. Very few facilities accommodate women who are pregnant or have small children. It is now clear that care sites should be able to address medical, drug use and living circumstance problems simultaneously.

The relationship of drug use to the spread of infectious diseases such as HIV, can be challenging to assess, particularly when, as in many cases, no specific risk factor for exposure is reported. (Warner, 1995) It is possible that pressures of stigma and fear associated with drug abuse may cause some individuals, particularly women, to be reluctant in identifying injection drug use as a risk factor. For this reason, many women are not identified as having health or drug use problems until very late in the natural history of these diseases.

V. IMPACT OF SOCIETAL PERCEPTIONS AND BELIEFS

There are numerous social, moral, personal and situational beliefs adversely affecting a drug using woman's health. Historically, the U.S. society's response to drug addiction is punitive, stigmatizing and prejudiced against drug users and their families. The negative public sentiment surrounding illicit and injection drug use is especially evident in criminal justice sentencing practices. Health providers often share these views of drug users as unreliable and non-compliant. Value-laden judgments may impact provider willingness to treat this population and influence the care provided and therapeutic regimens prescribed. Providers may be also being reluctant to raise the subject of substance abuse or treatment with patients because of misconceptions about the effectiveness of treatment.

Women with substance abuse are more likely to experience poor health and are less likely to access services, receive treatment or seek health care, partially

because of the stigma of drug use. Suspicion, fear and distrust of the health care system result in reluctance among drug users to disclose medically necessary information. Negative sanctions, such as mandatory HIV testing during pregnancy and incarceration of drug using pregnant women for child abuse, have intensified fears about contact with the health system. For economically disadvantaged women with HIV and drug abuse problems, the fear of discrimination, retribution, loss of housing or loss of children may become more important than seeking or engaging in health services (Sly, 1997) and may keep them from receiving personally tailored prevention messages.

Individuals who are drug dependent, even though they may exhibit dysfunctional behavior, retain the right to be evaluated as individuals and to be treated with respect and equality, regardless of conflicts in values or beliefs between patient and physician.

VI. IDENTIFICATION OF SUBSTANCE USE

A. DIAGNOSIS BY HISTORY

Identification of substance use can be a challenge, given the myriad of illnesses it can mimic. However, the biggest barrier to identification is denial. Given the stigma associated with substance use, as well as the stereotypes associated with substance use, health care providers must entertain the diagnosis in *all* patients. Substance use must be a diagnosis to be excluded in the differential diagnoses of many medical conditions. Table 10-5 lists clues to a possible substance use diagnosis. These clues include erratic behavior, agitation, disorientation, doctor 'hopping', child custody loss and frequent unexplained accidents.

<i>MEDICAL HISTORY</i>	<i>BEHAVIORAL CLUES</i>	<i>SOCIAL HISTORY CLUES</i>
<ul style="list-style-type: none"> ■ HIV infection ■ Endocarditis ■ Hepatitis B or C infection ■ Septic Embolic ■ Septic thrombophlebitis 	<ul style="list-style-type: none"> ■ Agitation ■ Somnolence ■ Disorientation ■ Erratic behavior ■ Doctor "hopping" ■ Frequent unexplained accidents 	<ul style="list-style-type: none"> ■ Inability to retain employment ■ Child custody loss ■ Seemingly unexplainable financial difficulties

The diagnosis of drug addiction is made by taking a careful history of drug use, as well as a directed medical and psychosocial history; performing a complete physical evaluation; and laboratory testing for the presence of drugs or the complications of drug use. Providers must also be aware of the variable duration of time drug metabolites are present in blood and/or urine. Hence, if the index of suspicion is high, a single negative lab result should not exclude the diagnosis.

The most commonly used instruments to detect and assess drug and alcohol use are the CAGE survey, the *Diagnostic and Statistical Manual of Mental disorders, Fourth Edition* (DSM IV) substance abuse diagnostic criteria, and the Addiction Severity Index (ASI).

If the provider cannot get a sense of the patients drug use from unstructured questions, the CAGE survey offers a non-threatening alternative approach. The CAGE survey is a four-question format intended to be used in primary care and other non-substance abuse-related health care facilities.

1. Have you felt that you ought to **C**ut down on your drinking or drug use?
2. Have people **A**nnoyed you by criticizing your drinking or drug use?
3. Have you ever felt bad or **G**uilty about your drinking or drug use?
4. Have you ever had a drink or used drugs first thing in the morning (**E**ye opener) to steady your nerves, get rid of a hangover, or to get the day started?

This type of screening test though simplistic is very useful for getting substance addicted patients into a trajectory for drug use care. Otherwise, they may be seen in different parts of the health care system for other problems, while the substance abuse is not addressed.

Finally, some patients will come to medical attention due to substance intoxication or withdrawal. As with substance abuse, entertaining the diagnosis, as well as recognition of the constellation of signs and symptoms is critical to recognition of intoxication and withdrawal syndromes. Alcohol intoxication maybe characterized by inebriation, sedation, ataxia and slurred speech. However, this extreme of behavior is witnessed in a subset of patients of the 113 million Americans age 12 and older who reported alcohol use, 33 million reported binge drinking (meaning they drank 5 or more drinks on one occasion 5 or more days during the past 30 days). (SAMHSA, 1999) Alcohol withdrawal can vary from agitation, to the more florid syndromes associated with the delirium tremens. This includes labile blood pressure, autonomic instability, visual hallucinations and death. It should be noted that delirium tremens is associated with a 10–15% fatality risk.

Opiate intoxication is associated with sedation, including somnolence or ‘nodding.’ There has been a resurgence in heroin popularity, with an estimated 81,000 new heroin users in 1997. (SAMHSA, 1999) Opiate withdrawal is characterized by the loss of CNS depression. These signs include piloerection, vomiting, diarrhea, agitation, irritability and sweating. Cocaine, and its alkaline cheaper form, crack, are highly addictive. Intoxication with cocaine is associated with euphoria, as well as profound hypertension (secondary to the vasoconstrictive effects). Increased pulse rate and dilated pupils are also associated with cocaine intoxication. Cocaine/crack withdrawal is associated with irritability, agitation, and mood lability.

The DSM IV criteria for drug addiction are developed for the 11 classes of abused drugs and include 7 major criteria (Table 10-6). DSM IV criteria determine addiction by finding evidence of physical or psychological dependence on a drug or tolerance to it, disruption of social life patterns, and disregard of the negative medical consequences of using drugs. A person is considered to be drug addicted if they fulfill 3 of the 7 criteria within the previous 12 months.

TABLE 10-6: DSM IV DRUG ADDICTION CRITERIA

■ Presence of drug use withdrawal
■ Escalation of drug doses
■ Persistent inability to reduce or control drug use
■ Increased time obtaining the drug
■ Personal and business activities are reduced by drug use
■ Development of drug tolerance
■ Knowledge of drug use's negative health and personal effects, yet continuing to use drugs
<i>Source:</i> Adapted from DSM IV, 4th edition, 1994.

The Addiction Severity Index (ASI) (Assessing Client Needs Using the ASI, 1995) is most commonly used to help health caregivers assess the severity of the drug addiction in persons who are already determined to have a drug use problem and for whom a treatment plan must be developed. The ASI is a detailed one hour assessment of environmental, historical, physiologic and drug related factors contributing to that individual's drug use. The specific areas of evaluation include: drug and alcohol use, psychiatric problems, legal problems, family/social issues, and employment/support concerns. Physical and psychological signs of drug use, and changes in medical and mental health status are also assessed. The data accumulated by ASI information is useful for developing treatment plans that include lifestyle change goals. The ASI is also a useful instrument for assessing progress at different follow-up points because it is time-based and yields quantitative composite scores for each problem area.

B. DIAGNOSIS BY LABORATORY AND CLINICAL EXAMINATION.

Substance abuse disorders are erratically diagnosed on physical examination because of caregivers' lack of interest or awareness of drug use symptoms or because the symptoms may be subtle. The majority of drug addicted persons have jobs and lead a "normal" life, without the stereotypic dysfunction of severe injection- and non- injection users. Cocaine snorting can be suspected by seeing a damaged nasal mucosa; hypodermic marks or "tracks" suggest injection drug abuse, although the absence of visible marks does not rule this out. The single most useful examination is of the eyes. Nystagmus is often seen in abusers of sedatives/hypnotics or cannabis. Mydriasis is often seen in persons under the influence of stimulants or hallucinogens or in withdrawal

from opiates. Miosis is a classic hallmark of opioid effect. Evidence of multiple minor (or past major) injuries can also be a clue to possible substance abuse.

Drugs may be detected in almost any fluid or tissue in the body. The most commonly samples for drug tests are urine, blood, saliva, hair, sweat and breath samples. (Wolff, 1999) Urine testing is the most available and useful testing format. There are test kits which may be used in offices and at home and require simple collection of a urine sample. Urine test limitations however are numerous. These limitations include the ability to detect only recent drug use as seen in Table 10-7. Furthermore, the samples can be adulterated, drug

detection changed by the acidity of the urine and it is unable to quantitatively analyze drug use. Blood testing is available to many caregivers but is more expensive and more cumbersome than urine analysis. Blood testing is more accurate at quantitative detection of drugs in the user. Saliva may also be useful and correlates well with drug levels in the blood. However, to use the saliva assay, complex

test standardization assays and calculations are needed to verify that saliva and blood drug levels are comparable. Hair analysis is a more recent technology which may be a future tool for drug detection. It has the advantage of detecting drug use over a 1 to 3 month period of time depending on a person's hair growth rate. The reasons that the test is not used widely are that cosmetic hair treatments, i.e. hair bleaching, may change drug level results as well as other factors such as hair pigmentation and hair growth rate. Sweat testing is another non-invasive test which is more useful for monitoring drug relapse during drug treatment. It is designed to continuously monitor a person's drug use over a period of time by placing a special absorbant pad on the skin. The pad continuously collects microscopic amounts of sweat produced by the body over time and is analyzed later for presence of drugs. Breath testing is commonly used to estimate the concentration of blood in a alcohol user and is a reliable reflection of blood alcohol. In research settings, marijuana may also be detected using breath testing. (Manolis, 1983)

Overall, The urine tests are the most reliable tests for clinicians to use. However, test results may be difficult to interpret for the inexperienced caregiver because the results may be confounded by secondary drug exposures, chemical characteristics of the drugs to be detected, drug level variations in

TABLE 10-7: DURATION OF DRUG DETECTION

<i>DRUG</i>	<i>DURATION OF DETECTION</i>
Alcohol	48 hours
Amphetamines	12 hours
Barbiturates	10-30 days
Valium	4-5 days
Cocaine	24-72 hours
Heroin	24 hours
Marijuana	3-30 days
Methaqualone	4-24 days
Phencyclidine (PCP)	3-10 days
Methadone	3 days
Sex, Food, Gambling	N/A

different body tissues and fluids and test method variations. Drug testing properly used, is a useful adjunct to clinical and behavioral drug use assessment and a useful but limited drug use screening tool. Drug tests should not be used as the sole criteria for detecting substance abuse but properly used is helpful during drug use, therapy and follow up.

VII. TREATMENT READINESS/HARM REDUCTION

Readiness for treatment involves a desire for drug abstinence. The motivating factors for treatment readiness in women are most commonly associated with difficulty in raising their children or in response to interventions by social services departments. (Brady, 1999) Unlike men, women are more likely to express their treatment readiness in non-substance use settings, especially in mental health care sites. (Lex, 1991) For that reason, drug use readiness should be evaluated in all health care settings for any drug.

For persons who are not ready for addiction treatment, caregivers can provide harm reduction interventions, aimed at reducing the damaging effects or harm resulting from risk behaviors and practices such as the sharing of syringes and other drug injection equipment and/or unsafe sex practices resulting from the use of drugs. (Des Jarlais, 1995) Comprehensive strategies that can effectively target high risk populations consist of a hierarchy of risk reduction approaches that, depending on the composition and needs of the populations being served, may include needle exchange programs or community outlets providing condoms. (Sumartojo, 1996) Sexually transmitted disease prevention programs, education programs, social and work skills building programs, health and drug use treatment health access programs should be provided through community resources. Programs targeting drug use populations and sub populations are all useful in preventing diseases such as HIV, STDs, Hepatitis and Tuberculosis and should eventually lead to encouraging the drug user to seek help in stopping drug use. (Needle, 1997)

A patient's history and behavior may be more predictive of treatment readiness and potential for engaging in care and adhering to therapeutic regimens than provider judgments based on gender, racial or ethnic background. There is a direct relationship between patient adherence with substance abuse treatment and the quality of the patient-physician relationship; however, the lack of physician training in the care of injection- and other drug abusers and the negative attitudes about drug use pose significant barriers. (Laine, 1998)

VIII. TREATMENT OF SUBSTANCE ABUSE

A. TREATMENT PROGRAMS

The most effective treatment programs are comprehensive and multi-dimensional and can be effectively delivered in outpatient, inpatient, and residential

TABLE 10-8: COMPONENTS OF DRUG USE TREATMENT

<i>PERSONAL NEEDS</i>	<i>TREATMENT NEEDS</i>
<ul style="list-style-type: none"> ■ Family services ■ Housing and transport ■ Financial services ■ Legal services ■ AIDS/HIV services ■ Educational services ■ Medical services ■ Vocational services ■ Child care services 	<ul style="list-style-type: none"> ■ Behavioral therapy ■ Clinical and case management ■ Intake and processing ■ Treatment plans ■ Pharmacotherapy ■ Continuing care ■ Substance use monitoring ■ Self-help/peer support groups

settings. In addition to behavioral (counseling, cognitive therapy or psychotherapy) and/or pharmacological therapies, the patient may need other medical services, family therapy, family planning, violence prevention, parenting instruction, vocational rehabilitation, and social and legal services (Table 10-8).

Treatment programs should also provide repeated assessments for HIV, AIDS, hepatitis B and C, tuberculosis, and other infectious diseases, as well as non-infectious diseases like diabetes and hypertension, and counseling and referral for relevant mental health treatment.

The most successful treatment occurs when the environmental, social, behavioral, medical and addiction problems are found early and treated over a long period of time (more than a year). Though it would be desirable to detect and treat drug use early after onset, when patterns of drug use are more easily treated or modified (Coates, 1998), most drug treatment modalities target more advanced stages of dependence, when medical or legal interventions are needed. Women's drug use problems tend to occur at an older age of onset and develop more rapidly than men. Women also learn of their HIV infection and other co-morbid conditions much later than men. The late diagnosis of drug use and other diseases often results in shorter survival. The confluence of factors which complicate health care for female drug users underscores the importance of early engagement and retention of women in care.

Effective treatment of drug dependence produces reductions in drug use by 40–60%, and significant decreases in criminal activity during and after treatment, and increases full-time employment. Establishment of accessible care in primary care settings offer countless opportunities to initiate prevention and treatment interventions targeted to adults, adolescents and other population groups at risk for drug abuse and associated problems. Easy health access for women is particularly important since their motivation for drug use is most often to cope with negative mood or anxiety. (McCaul, 1999) Providers should be accessible and should monitor individual triggers for stress and levels of stress sufficient to produce drug use complications or relapse.

B. PHARMACOLOGICAL INTERVENTIONS

Today even the most severe physical withdrawal symptoms can be managed with appropriate pharmacological treatments, reducing the emphasis on physiologic dependency as the focus of treatment of drug addiction. Drugs for alcoholics and sedative-hypnotic addicts are important for controlling and preventing serious medical consequences of drug withdrawal while other medications like methadone can help stabilize a patient and facilitate a return to productive functioning. Other important pharmacological interventions include the treatment of comorbid conditions common in drug using populations. Use of anti depressants in mentally ill drug users are as important as therapies directed to the effects of the drugs of abuse.

The pharmacological treatments for drug use are well known but not well understood by many health care givers. There are several classes of medications which maybe used to treat, modulate or prevent drug use.

OPIATE ADDICTION

Opiate agonist drugs like methadone, 1-alpha-acetyl-methadol (LAAM) and buprenorphine are used as opiate substitutes for opiate-dependent addicts. These 3 drugs, used to treat addiction, block the ability of the illicit drugs to attach to opiate receptors therefore decreasing a person's craving for the drug without causing euphoria. This is the most misunderstood medical approach to addiction treatment. Although methadone, LAAM and buprenorphine are addictive, they are successful helping the addict stop their negative and harmful drug use associated behaviors and begin to concentrate on developing the skills to discontinue drug use entirely. It is the drug craving which is associated with drug use relapse and criminal behavior and it is its prevention that makes substitution medications work successfully as part of a drug use treatment program. Methadone suppresses withdrawal for 24 hours (four to six times the duration of the effects of heroin) and decreases or eliminates drug craving; it is not sedating and can be dosed once a day. Furthermore, it is medically safe even when used continuously for 10 years or more.

LAAM is a newer synthetic opiate resembling methadone. LAAM can block the effects of heroin for up to 72 hours with minimal side effects when taken orally. Its long duration of action permits dosing just three times per week, thereby eliminating the need for daily dosing and take-home doses for weekends.

These substitution medications are not a cure for addiction but important adjunct to care. It has been shown that while an opiate user is on methadone, she is much less likely to commit a crime and more likely to succeed in completing a drug use program.. However, when combined with behavioral therapies or counseling and other supportive services, these pharmacologic approaches are highly effective for treating heroin addiction, particularly in those with long-term addiction.

Antagonist medications like Naloxone and naltrexone block the effects of morphine, heroin and other opiates. As antagonists, they are especially useful as antidotes. Naltrexone, with a duration of action ranging from 1 to 3 days depending on the dose, blocks the pleasurable effects of heroin and is useful in treating some highly motivated individuals, such as professionals who do not want to lose their jobs. It is also successful in preventing relapse by former opiate addicts released from prison on probation.

ALCOHOL ADDICTION

Antabuse (disulfiram) is used in alcohol abusers by causing negative side effects when the patient tries to consume alcohol. The drug interferes with alcohol metabolism, causing the production of acetaldehyde, a noxious chemical which causes severe flushing, nausea, and vomiting. The effectiveness of therapy is dependent on patient adherence to a daily medication dose. Acamprosate (Putzke, 1996) is a newer drug currently used in Europe which also decreases the desire to drink alcohol by affecting gamma aminobutyric acid and glutamate brain receptors causing decreased alcohol craving.

COCAINE ADDICTION

There are no effective medications for treating cocaine addiction but in some cases treating comorbid mental health problems may improve a cocaine or crack addict's chances of stopping cocaine use. Pharmacologic therapies have been specifically targeted at decreasing the dysphoric effects of cocaine withdrawal. Unfortunately, studies examining anti depressant medications targeting numerous neuron targets and multiple generations of antidepressant medications such as fluoxetine, sertraline, maprotilene, phenelzine, trazodone and lithium have not been proven successful in assisting a person in permanently stopping cocaine or crack use. (McCance, 1997) Dopaminergic agents such as bromocriptine, amantadine, haloperidol, bupropion and others have also not been proven to be effective. However, in a studies using desipramine, carbamazine and bupropion, the drugs' effects on the mental health of the affected patient were clinically helpful for a patient's successful drug cessation in drug use treatment program. (Kranzler, 1999)

DETOXIFICATION

Addiction detoxification is used to either prevent serious medical or psychologic complications of drug withdrawal from alcohol or sedative hypnotics or is used to ease the symptoms of withdrawal from the other drugs which do not have withdrawal syndromes with any significant morbidity or mortality (all other drugs of abuse). (Prater, 1999) In either case, detoxification protocols are not treatments for drug use but are part of a drug use treatment strategy.

Detoxification of alcoholics and sedative hypnotic users will prevent severe and sometimes fatal complications of drug withdrawal. For alcoholics, chlor-diazepoxide (Librium) sedation is an important part of patient therapy. In most



cases, the treatment should be done in hospital settings and if a woman is pregnant, Librium should not be used. Alternative medications especially for persons with severe liver disease are lorazepam (Ativan), oxazepam (Serax) and phenobarbital. In conjunction with the sedatives, thiamine to prevent Wernicke-Korsakoff syndrome and clonidine or beta blockers may be helpful to control noradrenergic symptoms in individuals. Withdrawal from sedative hypnotics is characterized by severe, chronic anxiety which may need one year of controlled, tapering doses of sedatives. Carbamazepine (Tegretol) and valproic acid have also been used to control anxiety in sedative-hypnotic patients. (Eickelberg, 1998)

Detoxification for other types of drug abuse are useful for diminishing the symptoms of drug withdrawal but do not have any long lasting beneficial effect on the drug user. For example, clonidine (Gold, 1979) and Lofexidine (Bearn, 1996) are used in this way because they decrease the adrenergic symptoms of opiate withdrawals. These measures are short term and do not address the true underlying problems of drug use. Even though the effects of detoxification are only short term, it is one of the few drug use interventions which is reimbursable in most health systems. (O'Brien, 1997)

NEW PHARMACOLOGIC APPROACHES

The combined use of antagonist-agonist medications has been evaluated for drug treatment, with the biological objective of preventing activation of opiate receptors with two medications blocking the activation of opiate and other drug use-related cell receptors. Recent research has found that treating nicotine addicted persons with mecamylamine prevents smoking relapse. (Rose, 1994) This may be a useful adjunct therapy for persons in tobacco cessation programs.

Anticraving medications are used to prevent a person from wanting to take the drug. The biology and psychology of craving and its prevention is not well understood but it has been proven to be effective in treating addiction to nicotine. Bupropion (Wellbutrin), an anti depressant medication, has been successfully used to treat cigarette craving. (Ferry, 1999)

Vaccines against addictive drugs are intended to block the binding of illicit drugs to their cellular receptors. Though no vaccines are currently available for human use, there is evidence that a vaccine against cocaine may be possible to develop. Much future research is planned in this area.

C. COGNITIVE/BEHAVIORAL INTERVENTIONS

Behavioral and cognitive interventions are not as well known as the pharmacologic approaches, but are a vital part of drug addiction treatment and prevention. Cognitive-behavioral therapies are based on the assumption that learning processes play an important role in the development of drug use and dependence and therefore is important for efforts to reduce use and dependence. Behavioral methods are employed to identify high-risk relapse situations, create an aversion to drug use, develop self-monitoring of use behavior, and

establish competing coping responses. By learning to recognize situations conducive to drug use, patients can develop individual coping strategies to avoid circumstances that place them at risk for relapse. Perhaps the single most important factor for short- and long-term relapse prevention is the learning and application of individual coping skills. Avoidance of other drug users and drug use environments are key tools for maintaining abstinence.

There are at least 11 research-validated therapies (Table 10-9) using a variety of behavioral, social, and incentive based systems to treat drug use. (Principles of Drug Addiction Treatment, 1999) The objectives of the different programs include removing patients from stressful environments to get care (short and long term residential homes); providing alternatives to pharmacologic treatment (outpatient drug free programs); and providing community specific interventions (community based programs for drug users and recently released criminals). There are several psychotherapy programs, based on the patient's willingness to recognize drug use as a problem and to stay off drugs, with or without incentives.

TABLE 10-9: NON-PHARMOLOGIC DRUG ADDICTION TREATMENTS

■ Supportive — Expressive Psychotherapy
■ Individualized Drug Counseling
■ Motivational Enhancement
■ Behavioral therapy for adolescents
■ Multi-systemic Therapy
■ Combined Behavioral and Nicotine Replacement Therapy
■ Community Reinforcement Approach
■ Voucher-based Reinforcement Therapy (Methadone Maintenance)
■ Day Treatment with Abstinence Contingencies and Vouchers
■ Matrix Model

Source: Adapted from *Principles of Drug Addiction*, NIH publication No. 990-4180, 1999.

The 12 step self help drug use problems are important non medical, behavioral drug use intervention and prevention programs which are used by 10 to 15 million Americans in 500,000 or more groups. (Goldsmith, 1989) These programs emphasize fellowship and provide support for maintaining drug abstinence from alcohol, other drugs or addictive behaviors like overeating. These programs are not intended to replace medical and behavioral drug use treatments but are meant to add to their effectiveness. The largest 12 step groups are Alcoholics Anonymous, Narcotics Anonymous, for all drug users including alcoholics, Al Anon, to support family and friends of alcoholics and drug users and Overeaters Anonymous. (Chappel, 1999) In 1976, Women for Sobriety was established as a 12 step program to help women when it was recognized that Alcoholics Anonymous did not address adequately the specific needs of alcoholic women. (Katkulas, 1996)

IX. PREDICTORS OF DRUG TREATMENT RETENTION AND THE DURABILITY OF TREATMENT GAINS

Predictors of treatment retention include high motivation, legal pressure, receiving psychological counseling while in treatment, no prior violations of the law, and an absence of other psychological problems. (NIDA, 1998) Specific characteristics such as: IV drug use, age, race, socioeconomic status, level of education and occupation are actually poor predictors of adherence to drug treatment programs. The most accurate predictors of drug program retention and medication adherence are health care beliefs, health care access, familiarity of the treatment setting, availability of social support, perceived support from the clinical staff, and simplicity of the treatment.

Provider and patient recognition of the chronic nature of drug addiction and the need for treatment is essential to successful and durable addiction care. It has also been recently shown that lasting reductions in drug use are greater for patients who remain in treatment for 3 months or longer (Drug Abuse Treatment Outcome Study, 1997) and are treated with a combination of medical, behavioral and cognitive treatments.

Available treatment options continue to expand, providing therapeutic combinations that, when appropriately matched to patients' specific treatment problems, can increase the patient's chances of staying drug free. (McClellan, 1997) Treatments taking care of a patient's specific social and personal needs, increases an individual's chances of successfully completing the treatment program, and have improved post-treatment outcomes. Treatment for women that is woman-focused and targets the unique needs of women, including their children, interpersonal, cultural and contextual issues, and employment and housing considerations are also known to increase effectiveness. (Metsch, 1995) Participation in these programs provides women with children to develop stronger life and social skills to insure stable independent living practices. (Hughes, 1995)

X. RELAPSE

Drug addiction is a chronic disease characterized by periodic drug use relapses. Although many treated addicts relapse, it is wrong to conclude that treatment has failed or that the addict is hopeless. Like diabetes or hypertension, the individual with a substance abuse problem will need frequent and long-term follow-up to maintain a drug free state. Not surprisingly, simultaneous treatment for co-occurring medical, mental health and drug use problems offers significantly higher rates of success. The interventions that successfully address comorbidity maximize linkages between school, community, clinic and other health service delivery systems. Woman- focused HIV prevention interventions include overcoming gender, cultural and power barriers that increase risks, such as learning negotiation strategies for gaining partner acceptance for condom

use, dealing with parenting responsibilities and interpersonal conflicts. The relative success and durability of approaches that have multiple and mutually reinforcing outcomes depends on coordination among professional and material resources in a rational, systematic, and cost-effective manner.

Treatment should be judged by the same criteria used for other chronic disease interventions: Will it help lengthen the time between relapses, ensure the individual can function in society, and minimize long-term physical damage?

XI. SUBSTANCE ABUSE IN PREGNANCY

It is difficult to determine the true prevalence of substance abuse by pregnant women. Stigma, criminal laws regarding child endangerment and denial all contribute to the epidemiological conundrum. Cross sectional studies at large urban center, given the high risk populations served, may overestimate community drug use health problems. In 1990, a Centers for Disease Control and Prevention study in Rhode Island revealed a statewide prevalence of 6.5%. A cross-sectional study the same year in Pinelen County in Florida revealed that 15% of unselected women had evidence of recent drug use. (Chasnoff, 1990) Despite 1975 data demonstrating the improvement in women's health and pregnancy outcomes, punitive approaches to the problem of substance abuse during pregnancy risk threatening privacy rights. This treat further serves as a deterrent to health seeking behavior, and may further threaten the health of women and children.

The sequelae of substance use in pregnancy is beyond the scope of this chapter, however, a few specific drugs will be highlighted.

Alcohol use in pregnancy is associated with fetal alcohol syndrome (FAS). This congenital syndrome is characterized by 3 findings: growth retardation, facial abnormalities, and central nervous system dysfunctions. Skeletal abnormalities structural cardiac defects are also seen in the FAS, but it is the performance deficits that are most obvious. Decreased IQ, fine motor dysfunction and hyperactivity are all common findings. (ACOG, 1994)

Cocaine use in pregnancy poses maternal as well as fetal hazards. Some of these stem from the intense vasoconstriction associated with cocaine (malignant hypertension, cardiac arrhythmias and cerebral infarction). Cocaine has been associated with premature rupture of membranes, pre-term labor and delivery, growth retardation, cognitive development delays and placental abruption. There are also documented cases of in-utero fetal cerebral infarction. (MacGregor, 1987)

Opiate addiction during pregnancy also poses serious risk to the mother, as well as the fetus. Newborn infants of narcotic addicted mothers are at risk for several complications, including the potentially fatal narcotic withdrawal syndrome. Withdrawal syndromes may appear 24 hours after birth, but may be delayed as long as 10 days after birth. (Levy, 1993)



XII. ANTIRETROVIRAL THERAPY IN SUBSTANCE ABUSERS

There is often a lack of compassion toward people who have contracted HIV through stigmatized behavior, such as drug use. (Hajela, 1998) Such sentiments are compounded by perceptions about adherence among drug users and the threat to public health associated with non-adherence leading to multi-drug resistant strains of HIV or other infectious diseases. (Gourevitch, 1996) These assumptions may lead to blanket denial of appropriate antiretroviral therapy to individuals with a past or current history of substance abuse.

Although active substance abuse (including alcohol, cocaine, or heroin) are associated with non-adherence, patient readiness for antiretroviral therapy must be carefully assessed on an individual basis, and those who have been treated for drug dependence may even be more adherent than the general population or other medical groups. However, drug users are less likely to receive care, with IDUs being among the least likely to receive antiretroviral therapies even when these treatments are available and free. (Shapiro, 1999) In fact, active IDUs may be up to 3 times less likely to receive HAART. (Carrieri, 1999)

XIII. CRIMINAL JUSTICE SETTINGS

Women are the fastest growing segment of the prison population, and their drug-related crimes are increasingly more serious. (FBI, 1997) Criminal justice reports show that substance use is implicated in the incarceration of 80% of men and women in state, federal and local prisons. Persons either violated drug laws, stole property to buy drugs, or have a history of substance abuse or addiction, or engaged in some combination of the above. (Maruschak, 1997) The more prior convictions an individual has, the more likely s(he) is to be drug dependent.

The most serious offense for 40% of women in state and federal prisons is the violation of drug laws. The enactment of mandatory sentencing policies has been associated with a ten-fold increase in the number of women incarcerated for drug crimes between 1986 and 1996.

Statistics show alcohol present in 31% of crimes, a combination of alcohol and other drugs in 16%, and other drugs alone 8.8%. A recent study confirms what many criminologists have long known: alcohol is associated with more violent crime than any illegal drug, including crack, cocaine, and heroin. Twenty-one percent of violent felons in state prisons committed their crimes while on alcohol alone. Only 3% were high on crack or cocaine alone, and only 1% were using heroin alone.

State officials have estimated that 70% to 85% of inmates need some level of substance abuse treatment; however only about 13% actually receive treatment. (Harlow, 1997) Those individuals with substance abuse histories also

have an increased likelihood of a history of physical and sexual abuse. (National Minority AIDS Council, 1997) Criminal Justice reports attribute the overwhelming majority of AIDS cases among inmates to injection drug use, with an incidence of new AIDS cases among inmates 17 times higher than that in the general population.

Inmates who have received appropriate treatment in prison are 50 to 60 percent less likely to be arrested again during the first 18 months after release. For each offender who successfully completes treatment and returns to the community as a sober citizen with a job, it is estimated that reduced crime, arrest prosecution and incarceration costs, health care savings and potential earnings accrue in the first year after release. (Califano, 1998) One study found that total savings can exceed costs by a ratio of 12 to 1, another that for every \$1 invested in drug treatment, there is a return of up to \$7. Levels of criminal activity have also been shown to decline by two-thirds from the period before treatment to a comparable period after treatment.

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