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THE ENCYCLOPEDIA OF

Drug Abuse

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FOREWORD

"Every junkie is a setting sun."

—*Neil Young*

During the past decade, it seemed that every day brought new information about the physiology of the human brain. New brain imaging techniques, chemical markers for neurotransmitters, new medications, and new understanding of the working of those medications have expanded our knowledge exponentially.

At the same time, methamphetamine and opiate addictions have also expanded. The crisis of homemade or readily available and dangerous addictive drugs has led to workplace drug testing and attempts to maintain drug-free zones near schools or businesses. The new understanding of ways in which these addictive drugs actually change the brain has not yet produced the kind of effective treatments that are available for other diseases.

The combination of 12-step programs is still only partially effective in treating those who are addicted to street drugs and prescription drugs. The numbers are much smaller than we would hope, and every day, new addicts are created. Nonetheless, physicians, patients, and families strive to cure, to overcome, to prevent, and to resist drug addition.

New medications are becoming available to treat opiate addiction and alcoholism. Trials of medications to help with amphetamine addictions are under way, and new uses for other drugs are being explored. There is synergy between trying to find new medications and learning about the true effect on the brain of the various addictive substances. Now we have proof that opiates and other drugs actually change receptor sites in the brain. The physical change in the brain promotes continued addiction in ways that were never understood before.

We are still losing people to the needle and the pipe. Generations are destroyed by drugs, as parents who are drug addicts raise their children in profoundly destructive ways, producing new generations susceptible to drug addiction who then raise their own children in homes of squalor and violence.

If knowledge has any power, I want this book to have that power to inform and instruct. Lives can be saved and addicts can recover and heal, and that can also be carried down the generations, with healthier, happier families. Workplaces are safer when workers are not under the influence of intoxicants. Patients are safer when doctors are not abusing drugs, and all of us are safer when drivers are clean and sober.

Some years ago, one of my patients died from an accidental overdose of street drugs. There were very few options for treatment at that time, and he was just not successful in overcoming a terrible addiction combined with a psychiatric illness. Now we have a half-dozen possible treatments that were not available then, and it makes me glad for the future and sad for the past. I look forward to a new edition of this book in a decade. Who knows what wonders will be yet ahead and what challenges will develop?

"As the circle of light increases, so does the circumference of darkness around it."

—*Albert Einstein*

—Esther Gwinnell, M.D.

PREFACE

Many people depend on prescribed medications such as benzodiazepines to cope with serious anxiety disorders, while others rely on narcotic pain medications to enable them to live relatively normal lives rather than being disabled by suffering from the severe pain that is caused by, for example, cancer, chronic back pain, or other debilitating conditions. In addition, others use stimulants to treat such problems as attention deficit hyperactivity disorder, narcolepsy, and other illnesses. Most people agree that these medications are essential in our modern-day society.

Yet there are also many people who abuse or are dependent on (addicted to) some of the same drugs that help so many others. In addition, some people abuse illicit substances, such as marijuana and heroin, as well as legal substances, such as alcohol and many prescribed medications. Sometimes abusers resort to criminal acts, including committing felonies, in order to obtain drugs. They cause great hardship to themselves and their families as well as to society at large.

Substance abuse has been a problem for thousands of years, although the particular drugs of abuse change periodically. In ancient times, people may have abused hallucinogens such as mescaline or similar drugs used as part of ceremonies in order to induce a dreamlike state. The ancient Incan royalty, nobility, and athletes, chewed coca leaves (from which cocaine is derived) for stimulation. In contrast, in the 21st century, the most popular legal drug used and abused by millions of Americans is alcohol, while the most popular illegal drug abused (and also used by millions) is marijuana.

Addiction and the abuse of drugs and/or alcohol are difficult and complex problems for which simple answers do not exist, and for which a multifaceted and forward-thinking approach often may be more effective.

For example, when a drug is accepted in society but is suddenly banned outright, as when the Eighteenth Amendment (commonly referred to as Prohibition) abruptly banned the use of alcohol, such action does not eliminate the desire for the substance. Instead, organized criminals, seizing an opportunity, manufactured and supplied many different types of alcohol to willing consumers for a considerable profit, until Prohibition was repealed and alcohol became once again a drug that was lawful for adults to consume.

Because of the failure of Prohibition, some people believe that all drugs should be "legalized," assuming that this action would drive down the prices of drugs and reduce jail and prison sentences. There is a valid argument for legalization. Yet, at the same time, the public expects from its government a certain degree of protection, and were the use of drugs such as methamphetamine or heroin suddenly legalized (as is unlikely), if and when harm was caused by individuals using these drugs, there would be a public outcry. As a result, a balance must be maintained between what rights individuals should enjoy and what controls society imposes on them. This book does not purport to resolve such key issues but rather seeks to provide information to clarify the issues.

In this volume, issues related to this complex balancing act, such as the use of narcotics (such as

OxyContin, oxycodone, hydrocodone, and other drugs and drug combinations) for pain control versus the abuse of these same narcotics by others seeking to obtain a state of euphoria or oblivion, are discussed.

Another conundrum is how individuals who are dependent on alcohol or drugs should be treated. Laws in the United States allow individuals to refuse treatment, no matter how ill they appear to physicians and others; however, at the same time, they may be punished with incarceration if they commit crimes while under the influence of drugs or alcohol, such as leaving the scene of a car crash in which someone was injured, stealing items to pay for drugs, prostituting themselves to obtain drugs, and committing many other criminal acts that are often inextricably linked to drug use. A variety of entries in this volume discuss aspects of this issue, including crime and criminals, gangs, jail inmates, and law enforcement.

There are many myths and misconceptions about drug abuse, and the key myths are explored in the entries in this volume. For example, one prominent myth is that minorities are the primary abusers of drugs and alcohol; however, with the exception of a high rate of alcohol abuse among American Indians and Alaska Natives, the highest proportion of substance abusers are whites. This is true across the board, no matter which drug is considered, whether it is cocaine, methamphetamine, anabolic steroids, or any other of the entire gamut of illicit drugs.

Whites are also more likely to abuse prescription drugs than individuals of other races. This does not mean that minorities do not have drug problems—many do—however, it does mean that the problem of drug abuse is not primarily confined to individuals of particular minority ethnicities and races. This issue is discussed in the separate entries on various drugs, as well as in the specific entry on racial/ethnic differences and drug and alcohol abuse.

Another common myth is that adolescents are the primary drug abusers and that drug abuse is simply a transient "stage" in the lives of many teenagers. Although some adolescents do abuse drugs and alcohol, studies such as the National Survey on Drug Use and Health have demonstrated, however, that in nearly all cases (with the exception of the abuse of inhalants), the largest proportion of drug and alcohol abusers are young adults, ages 18–25. In addition, college students, usually in their late teens and early twenties, are also heavy abusers of both alcohol and drugs, although often their noncollege peers are heavier abusers of substances. As a result, this volume offers separate entries on adolescents, college students, and young adults and their particular issues with substance abuse.

A third common myth is that alcohol is a "safe" drug compared to marijuana, cocaine, and other drugs that are often used illicitly. Instead, although alcohol can be purchased legally by those individuals ages 21 and older (and is often also consumed by those who are underage), it is a very dangerous drug that can lead to fatalities caused by car crashes and personal violence.

Thousands of people die of causes related to health issues caused by the chronic consumption of alcohol, such as cancer, cirrhosis of the liver, heart attack, and stroke, to name the most serious illnesses. Children born to alcohol abusers may suffer from severe and lifelong developmental disabilities, such as fetal alcohol syndrome. These issues are discussed in the entries on injuries caused by alcohol and/or illicit drugs, alcohol abuse and dependence and health problems, and fetal alcohol syndrome.

Another common myth is that chronic marijuana abuse is harmless. Although occasional use usually will not cause serious problems, studies have shown that frequent use is associated with increased risks for criminal acts and violence, despite the image of marijuana as a "mellow" drug. This myth is discussed at length in the entry on marijuana.

Last, a common myth is that most people take illegal drugs or abuse prescription drugs simply in order to get "high." Although that goal is certainly an element of abuse, many abusers and addicts have or develop serious psychiatric problems, such as antisocial personality disorder, anxiety disorders, attention deficit hyperactivity disorder (often untreated), bipolar disorder, depression, or schizophrenia and all are related to their substance abuse and dependence. Each of these psychiatric disorders is discussed as a separate entry in this encyclopedia.

Drug and alcohol abuse are likely to continue to be major problems in our society, but with increased knowledge, better solutions can be sought and identified. Knowledge is power.

My coauthor and I hope that readers will find this book informative, interesting, and thought-provoking.

—Christine Adamec

INTRODUCTION

THE HISTORY OF DRUG ABUSE

Narcotics and other addictive drugs as well as alcohol (also a drug) are substances that have been used since ancient times to treat illness, accompany religious rituals or family celebrations, stimulate the mind, or sedate and soothe the emotions. They have also been abused for millennia. In many cases, drugs that were once considered acceptable by society later became unacceptable or even illegal. For example, opiates and cocaine were generally considered acceptable substances in the 19th century and were commonly used by many people for medical and nonmedical (recreational) reasons; however, the nonmedical use of these drugs became illegal in the 20th century and medical uses were sharply curtailed.

In addition, the use of marijuana was not perceived as a problem in past centuries, although it is an illegal drug in the United States today. As well, alcohol was lawfully manufactured and consumed in most states in past centuries until its manufacture was banned by the Eighteenth Amendment (Prohibition) in 1917, because attitudes toward alcohol use were extremely negative at that time. Prohibition was eventually repealed and the manufacture of alcohol became legal and acceptable once again.

This historical overview describes drug and alcohol abuse through time, starting with drug abuse, then moving on to alcohol abuse, past to present. Note that societal attitudes toward those who abuse or are dependent on (addicted to) drugs and/or alcohol have periodically changed in a cyclical manner. In some periods, substance abuse has been tolerated, whereas in other ages, the abuser is demonized as an immoral and even an evil person. In addition, drugs and alcohol themselves, as substances, have alternately been ignored, tolerated, or viewed as inherently wicked and corrupting influences.

Considering Drug Abuse Through History

The use and abuse of drugs are not modern phenomena and probably predate written language. The icon of the opium poppy was depicted in the ancient language of Sumeria in southern Iraq, dating back to 3100 BCE. The Ebers Papyrus, which dates to 1500 BCE, includes about 800 prescriptions, including those that use the berry of the poppy; thus, the value of the opium poppy was clearly known to the ancients thousands of years ago.

Many well-respected people in the past either used or were addicted to drugs such as opium, laudanum, morphine, and cocaine, including the poet Elizabeth Barrett Browning, the authors Guy de Maupassant and Louisa May Alcott, and many other luminaries. The famous nurse Florence Nightingale was a user of opium, and she wrote to her friend in 1866 that nothing helped her illness but "a curious new-fangled little operation of putting opium under the skin," clearly referring to injection by a hypodermic needle. The inventor Thomas Edison was a cocaine user, as was Sig-

mund Freud, the creator of psychoanalysis. King George III of England (1738–1820) took opium for his rheumatism.

Looking back earlier in time, the epic poems written by the great Greek poet Homer referred to the use of opium, and in the *Odyssey,* opium is described as the drug that quiets all pains and quarrels. The famous Greek physician Galen created lists of individuals in his era who were authorities on the use of opium. In the time of Pliny the Elder, an excess of opium was often used as a means of suicide, as described in Pliny's account of the suicide of the father of Publius Licinius Caecina, a Roman senator.

In the 11th and 12th centuries, returning crusaders took opium back to Europe from Arab lands. At first the use of the drug was very limited, but eventually opium was perceived and used as a powerful analgesic.

In the Middle Ages, according to Charles F. Levinthal in *Drugs, Society and Criminal Justice,* Viking warriors who consumed hallucinogenic mushrooms were known as "Berserkers." In later years, violent and irrational behavior became known as *berserk* behavior. Also in medieval times, women who believed themselves to be witches created a variety of concoctions and brews. Some self-proclaimed witches relied upon the sweat glands of toads (which had hallucinogenic qualities) for their purportedly magical concoctions.

Marijuana has been used for many years, and according to Levinthal, the first reference to cannabis was in writings in 2737 BCE, when the drug was used to treat gout, malaria, rheumatism, and other maladies. However, there were periods when marijuana was negatively perceived; for example, in 1484, Pope Innocent VII condemned the use of hemp (marijuana) in the Black Mass, a proscription that presumably indicates that some people used the drug.

Drug Abuse in the Eighteenth Century

Prior to the Revolutionary War in what is now the United States, many colonists relied on so-called patent medicines imported from Britain for a variety of ailments. Many of these drugs contained opium. After the Revolutionary War, sales of drugs from American medicine makers were boosted because it seemed far more patriotic to buy from within the country than to purchase from a recent enemy. Drug sales from Britain never regained their former popularity.

According to David F. Musto in *The American Disease: Origins of Narcotic Control,* opium was commonly available in America before 1800, in multidrug prescriptions. Says Musto, "Valued for its calming and soporific effects, opium was also a specific against symptoms of gastrointestinal illnesses such as cholera, food poisoning, and parasites."

The High Prevalence of Drug Abuse in the Nineteenth Century

The use of drugs in the 19th century was, in retrospect, almost shockingly common. According to Levinthal, an estimated 25 percent of the population in the United States in the 19th century relied upon either morphine or opium, and these and other drugs were widely available to the general public. They were often included in popular nostrums purchased at the local apothecary (pharmacy) with no prescription. Yet to individuals in the 21st century, the idea that opium and its products (as well as cocaine) were freely available to men, women, and children and even administered to infants in the past is difficult to understand or grasp.

Barbara Hodgson offers some perspective in her book *In the Arms of Morpheus: The Tragic History of Laudanum, Morphine, and Patent Medicines:*

> Before the twentieth century, those who were ill had little choice but to turn to a substance such as opium. At least three conditions paved the way for this situation. First, opium was a vital means of coping with cholera, dysentery and tuberculosis, diseases borne of horrific living conditions such as those of the Industrial Revolution, because it reduced the physical manifestations of the disease—for example, diarrhea and coughing. Second, many diseases were incurable; opium eased the pain brought on by these ailments. And last, because opium was effective, available and cheap, those who distrusted or couldn't afford medical help diagnosed and treated their ailments themselves.

Opium was used by physicians to treat severe pain, menstrual problems, dysentery, arthritis, dia-

betes, pneumonia, sexually transmitted diseases, and many other ailments. It was actually effective in treating dysentery because opiates tend to cause constipation. Opiates were and still are effective at treating pain; however, they have no antibiotic or antiviral action, nor do they treat diabetes, and thus they were and are not efficacious in treating bacterial or viral diseases. However, the drug did make many sick people feel better.

Opium was available in powdered and gum forms, although most people consumed opium in some type of solution. Many people drank their opium in laudanum (a mixture of opium and other ingredients), and many of these solutions included up to 90 proof alcohol.

Patent Medications Were Very Popular

After the Civil War, sales of patent drugs escalated. Most of the drugs were not actually patented, but some were trademarked. However, these remedies together were referred to as patent medications. There were no controls over these medications; they were freely obtainable and obtained. Most consumers had no idea of what was included in their favorite remedies.

Says the author John Parascandola in his article on patent medications in *Caduceus,* "After the Civil War, patent medicine quackery really entered its golden age. Thousands of products flooded the market. As the cost of getting into business was relatively small and no great knowledge was required, many would-be entrepreneurs entered the field." In many cases, these drugs were worthless to trusting consumers, and in some cases, individuals became addicted to narcotic-laced remedies.

Medicine makers advertised their concoctions in calendars, almanacs, coloring books, and cookbooks, and in many other ways. Some sellers offered medicine shows, where they marketed their drugs in public and combined the sales pitch with a puppet show, magic show, or animal act.

Mail order drugs were also readily available to the population. According to Stephen R. Kandall, the author of *Substance and Shadow: Women and Addiction in the United States,* many Americans relied on patent medicines purchased through Sears Roebuck and similar mail-order catalogues. Some concoctions had names that may amuse the public today, such as Pink Pills for Pale People and Mrs. Winslow's Soothing Syrup.

Some of the popular patent medications that were sold by mail or in apothecaries and were specifically targeted to infants and children contained narcotics; for example, Mrs. Winslow's Soothing Syrup contained morphine (as well as sugar syrup, anise, caraway, fennel, and alcohol) and was given to infants for teething pain or other common problems of infancy.

Cough syrups commonly included narcotics; for example, according to Parascandola in his article in *Caduceus,* Dr. Bull's Cough Syrup comprised morphine sulfate dissolved in syrup.

Women and Opiates in the Nineteenth Century

In the 19th century, experts estimate that women used opium at a rate at least three times greater than that of men. In part, this was because the drug was commonly recommended or administered to them by physicians as a cure-all solution for numerous complaints. In addition, alcohol use among women was greatly frowned upon, while the use of opium and laudanum was widely accepted. Women were also heavy consumers of popular nostrums laced with opium and morphine. Most addicted women had no trouble obtaining their "medicine" whenever they needed it.

Opium and morphine were prescribed for menstrual difficulties, headaches, and many other common ailments suffered by females. As a result, some women became addicted to drugs. Says Kandall in *Substance and Shadow: Women and Addiction in the United States,* "Addiction to opiates touched all social levels—society women identifying with the artistic or intellectual set, rural and working-class women coping with long hours and loneliness, and prostitutes in city streets and opium dens. It is hardly surprising that such a large proportion of America's opiate addicts were women."

The Introduction of Morphine in the Nineteenth Century

Morphine was isolated from opium in 1803 by Frederick Wilhelm Adam Sertürner in Germany, who called his creation "morphium," which was later shortened to *morphine.* Morphine was only

about one-tenth the weight of raw opium but it was ten times stronger.

Morphine first became available in the United States in the 1830s but its popularity surged several decades later. The drug was frequently used to treat wounded soldiers in the Civil War and some developed a lifelong addiction to the drug. In addition, widows and family members of soldiers who died in the war often took morphine or other opiates to deal with their grief.

Morphine was commonly used in the second half of the 19th century, particularly after the development of the hypodermic needle, which was introduced in the United States in 1856. At that time, doctors believed that since injected morphine did not travel through the digestive system, then there would be no craving for the drug, and thus, morphine would not be addicting. Of course, they were wrong in this assumption.

People in the 19th century also took morphine as a treatment for sexually transmitted diseases, such as syphilis, as well as for a broad host of other diseases and medical conditions, such as sciatica, cholera, hernia, and even sunstroke.

Americans could purchase syringes by mail from catalogues, and some fashionable women carried their morphine syringes in special pouches attached to their belts or sashes. Many individuals, including physicians, had no idea of the dangers that were associated with reusing needles. Because of this lack of knowledge, unsterile needles caused severe skin abscesses in many users.

Says Morgan in *Drugs in America: A Social History 1800–1980,* "Even before warnings about addiction began in the 1870s, many commentators thought hypodermic medication overused. One doctor reported in 1877 that a colleague showed him an old syringe 'with as much pleasure as an old veteran would show his trusty blade, and claiming that he had used it more than one thousand times.'"

Cocaine Becomes a Popular Nineteenth-Century Drug

Another drug commonly used in the latter part of the 19th century was cocaine. Cocaine was originally isolated from the coca plant in the 1850s and given its name by the German chemist Alfred Niemann. But the use of the coca plant preceded the development of cocaine for many centuries and the ancient Inca chewed coca for energy and stamina.

In the 1860s and into the early 20th century, the patent medicine industry used cocaine in many nostrums, although most people had no idea they were ingesting a potentially addicting drug, since there were no labeling requirements and few people, including physicians, knew that cocaine was addictive.

In 1884, the ophthalmologist Karl Koller wrote about the anesthetic properties of cocaine, and many surgeons worldwide were intrigued. At that time, doctors actively sought an anesthetic alternative to the highly unreliable ether, and cocaine seemed ideal.

Cocaine became popular among physicians when a young neurologist, Sigmund Freud, wrote a monograph about the beneficial effects of cocaine in 1884. Cocaine was subsequently used to ease the pain of labor for mothers in delivery and many physicians nationwide (and worldwide) perceived cocaine as an effective analgesic for a variety of ailments. One common use of cocaine was as a treatment for hay fever and sinus congestion. Cocaine was also used to treat cholera, yellow fever, and sexually transmitted diseases, such as syphilis. As with opiates, cocaine has no antibiotic or antiviral qualities, although it provides pain relief.

Cocaine was sometimes used as a treatment for those addicted to opiates, and Freud allegedly recommended cocaine to a friend who was a morphine addict; however, this individual subsequently became addicted to cocaine. In fact, cocaine was recommended by many physicians of the time as a treatment for opiate addiction, and according to some accounts, this treatment worked without inducing a new addiction to cocaine. However, in other cases, as with Dr. Freud's friend, the patient simply exchanged one addiction for another.

Cocaine was also used as a physical stimulant (particularly for the heart), a mental stimulant (there were no available antidepressants at that time), a drug for gastric distress, a treatment for kidney disease, and, as mentioned, a medication for colds, hay fever, and sinus troubles. The Civil War general Ulysses S. Grant experienced severe pain from terminal throat cancer and used cocaine

to help him finish writing his memoirs before his death.

In addition to being included in tonics, wines, and soft drinks, cocaine was offered in a smokable form of the drug: cocaine cigarettes and a cocaine cigar. Smoking several of these cigars was marketed as a good way for men to get rid of the "blues."

However, when cocaine was used nonmedically, often by young urban males, this abuse was widely disparaged, and the term *cocaine fiend* was frequently used to describe and deride such young men.

Cocaine and Coca-Cola

John Styth Pemberton, a druggist from Atlanta, Georgia, initially used cocaine in his "French Wine of Coca, the Ideal Tonic" in 1866, modeling it on Vin Mariani. Vin Mariani was an extremely popular beverage in Europe, created by Angelo Mariani, a Corsican chemist, and it was also consumed in the United States. Because of a temperance attitude in Atlanta, Pemberton removed the alcohol from his product, using kola nuts (which contain natural caffeine) and cocaine to make the drink he named Coca-Cola. The first Coca-Cola was sold at Jacob's Pharmacy in Atlanta on May 8, 1886, according to the Library of Congress. (Cocaine was removed from the soft drink in 1903 according to the *Southern Medical Journal.*)

The new drink was a major success and was marketed as an "ideal brain tonic" that could treat migraines, depression, and neuralgia. Coca-Cola was marketed as a "temperance drink" (for those opposed to the use of alcohol) as well as an "intellectual beverage."

The cola syrup was originally mixed with tap water, but when mixed with carbonated water to provide quick relief to a headache sufferer, the new drink was a success and carbonated water was added as a new ingredient to the product. Pemberton sold his formula to the drink before his death. Coca-Cola was actively promoted and continues to be a major success story.

Cocaine as a Means to Spur Laborers

In the late 19th and early 20th centuries, some employers who hired workers (often minority members) for difficult physical labor encouraged the use of cocaine and even supplied the drug to them in some cases, according to Joseph F. Spillane in *Cocaine: From Medical Marvel to Modern Menace in the United States, 1884–1920.*

According to Spillane, "Many saw the drug as a means of increasing production and manipulating their workforce. Levee construction camps operating along the Mississippi River reportedly supplied cocaine to workers, as did many southern road construction camps."

In addition, says Spillane, "Textile mills were particularly likely to have cocaine introduced by workers, supervisors or employers. In Manchester, Connecticut, the home of many silk mills, one employer attempted to ease problems caused by irritating dust from the production process by supplying workers with a menthol and cocaine spray, to be taken on the job. In Maine, operatives from the textiles mills in Lewiston purchased cocaine for their workers."

The fact that many such workers were blacks may partly explain why cocaine was a problem drug among some blacks of the time.

Marijuana in the Nineteenth Century

Cannabis sativa (marijuana) first became of interest in the United States in the mid-19th century, as did hashish. Some doctors prescribed a tincture of cannabis for oral use or injection. Most users mixed marijuana with food or smoked it. According to Morgan, cannabis was available in candy, food, and some drinks, all ready for purchase and with no controls on its use or consumption. Says Morgan: "Between 1840 and 1900, dozens of articles in the medical journals suggested cannabis for innumerable ailments, and it entered the pharmacopoeia in 1870. It seemed useful as an anticonvulsant and relaxant, even in cases of tetanus and hydrophobia [rabies]. Doctors experimented with it widely, often to alleviate disorders for which they had no other remedies."

Marijuana was used to treat insomnia and migraine, especially the migraines of women. In addition, it was used to treat labor pains, postpartum psychosis, and sexually transmitted diseases, such as gonorrhea. Some physicians used marijuana to treat opium addiction.

By the end of the century, the use of marijuana by the general public declined, and it did not again

become a popular drug for several generations, from the 1960s to the present.

The Introduction of Heroin

Although heroin was first synthesized from morphine in 1874, it was introduced by the Bayer Company in 1898. Heroin was three times stronger than morphine and believed to be nonaddictive. The drug was recommended to tuberculosis patients for chronic cough, but many other applications developed quickly, and heroin was an ingredient in many patent medications. Considered a wonder drug that could relieve virtually any complaint, heroin was even included in remedies for colicky and teething infants. Often heroin was combined with a high dose of alcohol in home remedies.

Experts initially believed heroin was much less addicting than morphine, because lower dosages of heroin were needed for effect; however, the reality was that heroin was much more potent than morphine, and therefore more addictive.

Drug Abuse in the Twentieth Century

In the early 20th century, many individuals believed that drug addiction was treatable or at least tolerable. However, since most addicts were middle- and upper-class women, often addiction was simply ignored. For those who sought treatment in the early part of the century (mostly men), facilities for individuals afflicted with drug abuse dotted the nation and primarily served those who could afford to pay their fees. The treatments of that time (hot baths, purgatives, and so forth) did not work, but the point is that attitudes toward the addict were not negative. This situation changed.

By about 1920, physicians were deeply split between those who felt it acceptable and humane to treat drug addicts with maintenance doses of the drug to which individuals were addicted and those doctors who considered it immoral to sell "dope" to so-called dope fiends. Many physicians believed that there was no organic basis for addiction, and consequently, anyone addicted to drugs should be compelled to stop taking drugs altogether. Some key figures, such as Dr. Lawrence Kolb, Sr., of the United States Public Health Service, believed normal people could not become addicted to drugs and only psychopathic individuals would develop an addiction. He believed a normal person would experience no euphoria from a morphine injection, whereas a psychopath would experience such a high.

Many modern studies have shown that some individuals have a genetic predisposition toward substance abuse; however, their physiological reaction to an initial injection of opiates is, as far as is known, the same as or similar to the experience of those who have no familial predispositions toward addiction.

Reform of Patent Medications

Reformers became distressed by opium-laced remedies in the early part of the 20th century, and in 1905, Samuel Hopkins Adams ran his "Great American Fraud" series in *Collier's* magazine, attacking suppliers of these nostrums. This series was influential in affecting public attitudes. In addition, after the passage in 1906 of the federal Pure Food and Drug Act, which required labeling of narcotics and alcohol on the bottle, the narcotic content of most patent medications diminished.

According to Musto, the morphine content of Mrs. Winslow's Soothing Syrup declined from 0.4 grain per ounce in 1908 to 0.16 grain in 1911, and morphine was totally removed from the product by 1915.

Early Twentieth-Century Theories on Addiction and Pathology

According to Spillane in *Federal Drug Control,* prior to World War I, many physicians believed in the antibody theory of addiction: that drug use somehow created antibodies in the blood of addicts, who, as a result, were helpless to end their drug addiction.

Says Spillane, "These physiological changes were [believed to be] beyond the control of the addict, and many doctors accepted that these changes required maintenance doses to be given indefinitely. Many of the leading supporters of the narcotic clinics had been schooled in versions of the antibody theory." Researchers now know that chronic drug use can result in brain changes, although these are not caused by antibodies or reactions to viruses, as far as is known.

By 1919, the theory that antibodies caused addiction was no longer in favor, and instead, addicts

were believed to be mentally defective or psychopathic, with no willpower to resist addictive drugs. Law enforcement was seen as the answer to keep addicts away from the drugs they craved. Because of this punitive attitude and change in policy, most narcotic maintenance clinics were closed by 1921.

Drugs in Wartime: World War II and the Vietnam War

In World War II, amphetamines in the form of Benzedrine and other drugs were freely given to Axis soldiers and sailors who needed to stay awake in battle conditions. These drugs were also used by the Allies (the United States, Britain, etc.) to keep *their* soldiers awake.

During the Vietnam War, service members were not given drugs by the government as in World War II; however, many drugs were freely available to military men and women stationed in Southeast Asia. Interestingly, most service members who used drugs in Vietnam readily gave them up when they returned home to the United States, even though some developed long-term addictions to heroin and other drugs.

According to Levinthal, an estimated 11 percent of the troops who returned from Vietnam were regular abusers of heroin and 22 percent had tried the drug at least one time, and there were great concerns about what was believed to be large numbers of these addicts returning to the United States. The heroin in Vietnam was very pure—90 to 98 percent pure, versus the heroin in the United States then, which was 2–10 percent pure. However, only 1–2 percent of the returned Vietnam War veterans continued to abuse heroin when they came home, whether it was because the drug was too costly in the United States or too difficult to obtain, or they were relieved to be back home (or the result of other factors or a combination of factors).

Tranquilizers, Barbiturates, and Diet Drugs

In the 1950s to the 1970s, many people (mostly women) were prescribed tranquilizers for a broad array of complaints. Physicians prescribed Methedrine, an amphetamine, for overweight patients. Calming drugs such as diazepam (Valium) became extremely popular. Says Kandall, "Like their nineteenth-century counterparts, who had recommended opiate-laden 'soothing syrups' and related compounds for patients suffering from psychic stress, overzealous physicians began to prescribe these medications with little sense of control, once again reaching for the prescription pad to treat women's neuroses and maladjustments."

In 1974, an estimated two-thirds of the new prescriptions written by doctors for Valium were for women, as were 71 percent of the new prescriptions for Librium, another tranquilizing drug.

Drugs and the General Public in the 1960s and 1970s

The abuse of illegal drugs in the United States skyrocketed in the late 1960s and early 1970s, and experts are still sorting out the reasons for this high rate of drug abuse. Dr. Timothy Leary, one of the few tenured professors to be fired from Harvard University, openly advocated the use of LYSERGIC ACID DIETHYLAMIDE (LSD), with his catch phrase "Tune in, turn on and drop out." D-lysergic acid diethylamide was first noted by Dr. Albert Hofmann of Sandoz Laboratories in Basel, Switzerland, in 1943. He accidentally took a small amount of LDS-25, the shortened name for the drug, and noted its hallucinogenic effects.

Dr. Leary also experimented with other hallucinogenic drugs, such as psilocybin. Some college students and young adults followed Leary's advice, abusing LSD, as well as other hallucinogenic drugs. However, these drugs were never as popular as marijuana, which was commonly found on college campuses in the late 1960s and the 1970s. Such drug use continues today although at much lower levels than in the sixties and seventies of the 20th century.

President Richard Nixon declared a "total war on drugs" after his election in 1968, and as a result of his efforts the Comprehensive Drug Abuse Prevention and Control Act was passed in 1970. The Nixon administration also funded treatment programs for heroin addicts, including detoxification programs and methadone maintenance clinics.

Under the administration of President Ronald Reagan, a tougher stance against drugs was adopted. Congress enacted the Comprehensive Crime Control Act, increasing penalties for the abuse of drugs and the scope of asset forfeitures that could be made against drug violators.

Cocaine became popular again in the 1970s and early 1980s, glamorized by Hollywood. According to the Drug Enforcement Agency, the amount of illicit cocaine that entered the United States increased from 19 metric tons in 1977 to 51 metric tons in 1980. Cocaine was the drug of movie stars, college students, and young professionals. It was also used as an appetite suppressant by some.

Drugs in the Mid- to Late Twentieth Century

In the middle part of the 20th century, tranquilizers in the benzodiazepine class were introduced. Chlordiazepoxide (Librium) was introduced to the market in 1960 and diazepam (Valium) was introduced in 1963. These drugs were popular drugs of abuse for about the next 10–15 years but have since largely fallen out of favor. They are still used as medications to treat individuals who have anxiety disorders. For example, in 1972, Valium was the first most popularly prescribed drug of any type of drug, and Librium was the third most popular drug. In 1975, when the popularity of these drugs peaked, it is estimated that 85 million prescriptions were written in the United States.

The primary users were women and some experts say that doctors were too ready with their prescription pads, just as they were generous providers of laudanum and morphine to females in the late 19th century.

Nancy Reagan, wife of President Ronald Reagan, launched an antidrug campaign in 1985, with the slogan "Just say no." Although it was much ridiculed, the campaign did draw attention to the problems associated with drug abuse and addiction. Some experts believe it was the emergence of crack cocaine that led to the escalation of a drug war by the federal government, as exemplified by the Anti–Drug Abuse Act of 1986. This law increased the role of the military in controlling drugs at the federal level and created mandatory prison sentences for drug offenders.

In 1986, President Reagan sought to get drugs out of the workplace and schools, making them "drug-free," and initiated the drug testing of some government workers in sensitive occupations. This decision was attacked by the American Civil Liberties Union and other groups, but drug testing has remained firmly entrenched in the United States to this day for many workers, students, and prospective employees.

Crack cocaine was of particular concern to law enforcement officials in the 1980s, and the penalties for the use or sale of this drug were severe, prompting some experts to wonder aloud why the sale or possession of crack cocaine was punished far more assiduously than was that of powdered cocaine, also an addicting drug. Some experts speculated racial issues were present, because most abusers of crack at that time were African Americans, while the majority of abusers of powdered cocaine were white.

In the latter part of the 20th century, it became increasingly popular for adolescents and young adults to attend all-night dance parties, also called *raves,* at which drugs were freely available. Marijuana, methamphetamine, and many other drugs were routinely bought and sold at these events, as were hallucinogenic drugs: METHYLENEDIOXYMETHAMPHETAMINE (MDMA/ECSTASY), PHENCYCLIDINE (PCP), LSD, and others. Eventually, law enforcement authorities cracked down on these functions, which became less common. However, it is still possible for adolescents and young adults to obtain illicit drugs from each other as well as from drug dealers.

Laws on Addictive Drugs

Prior to the passage of the first federal laws on drugs, many states and some cities had restrictions; for example, in 1875, San Francisco created an opium ordinance, and in 1877, Nevada enacted the first state opium law. Tennessee passed a law banning the sale of cocaine in 1901. By 1914, before the passage of the Harrison Narcotic Law, nearly every state had banned the sale of cocaine.

Says Spillane, "Because the earliest laws dealt with sales, not possession, sellers caught with drugs would often be charged with disorderly conduct or some other offense. In this way, an arresting officer could take a seller into custody without having to prove that a sale had taken place."

In 1914, the Harrison Narcotic Act was passed by Congress. This law was created largely because of the Hague Opium Convention of 1912, an international treaty the United States had signed that required the United States to develop restrictions

on cocaine and opiates. The law took effect on March 1, 1915. The law allowed the federal government to tax those who managed drugs, such as pharmacists and physicians, and it also required them to register with the federal government and pay a federal tax of one dollar per year. Patent medications with only a small amount of heroin, opium, cocaine, or morphine were exempt from the law. The law went into effect in 1915.

After the implementation of the Harrison Narcotics Act, pharmacists could only fill prescriptions for narcotics that were written by physicians or dentists (with some exceptions), and the law did not allow for refills of prescriptions.

Shortly after the passage of the Harrison Act, the government created a requirement that taxed drugs also had to be stamped, and anyone who had unstamped drugs was breaking the law. Several U.S. Supreme Court decisions that followed the Harrison Act led to the interpretation that physicians could not prescribe any narcotics for "nonmedical" use. As a result, addicted individuals could not receive maintenance doses of the drugs to which they were addicted.

In part because some physicians believed addiction was largely physician-driven in the late 19th century, many physicians did not fight the increasingly rigid rulings by the Treasury Department, which oversaw the laws enacted as a result of the Harrison Act. In *Webb v. United States* in 1919, the U.S. Supreme Court ruled it was illegal to prescribe morphine to an addict to keep him or her comfortable. In 1922, in *U.S. v. Behrman*, an even more restrictive ruling, the Supreme Court ruled that it was illegal for a doctor to prescribe drugs to an addict.

Dr. Charles Linder of Seattle was prosecuted for giving a prescription of four tablets to a person he thought was an addict but who was actually an informant for the Treasury Department. Dr. Linder fought his prosecution and in 1925, in *Linder v. U.S.*, the Supreme Court overturned his conviction. However, according to author White, despite this ruling, the Treasury Department continued to intimidate physicians about treating addicts, and more than 25,000 doctors were indicted between 1914 and 1938, and 3,000 of them went to jail.

Desperate addicts went from physician to physician seeking narcotics, and some injured themselves or faked infections in order to obtain their drugs.

In 1922, the Jones-Miller Act, which increased narcotics violation fines to $5,000 and prison terms to up to 10 years, was passed. According to White, "In less than a decade, the status of the addict had shifted from that of legitimate patient to that of willful criminal."

Some addicts were incarcerated, and according to Winger and colleagues in *A Handbook on Drug and Alcohol Abuse: The Biomedical Aspects,* prison overcrowding resulted. Incarceration did not help addicts or change their behavior, so a new concept, that of *narcotic farms,* was developed and enacted by Congress in 1928. It was believed that hard work and clean living at one of the farms in Lexington, Kentucky, or Fort Worth, Texas, would rehabilitate drug addicts.

Say the authors, "By involving addicts in the hard but productive labor required by agriculture, in the context of clean healthy rural life, these combined prisons and farms were intended to develop moral character, the lack of which had caused these unfortunate people to become addicted." However, the narcotic farms were largely unsuccessful, possibly because many addicts eventually returned to the environment in which their addiction developed.

In 1970, the Comprehensive Drug Abuse and Control Act was passed; this law created the initial concept that drugs could be scheduled in terms of their addictive potential. Title II of this law was the Controlled Substances Act (CSA), which placed addictive drugs into five separate categories based on their addictive potential. (The entire act is often referred to as the Controlled Substances Act.)

In the CSA, drugs in Schedule I were illegal drugs such as marijuana and heroin, while drugs in the other schedules were drugs with medical use but an abuse potential; for example, Schedule II drugs included opiates also used legitimately to treat pain but which were sometimes abused. Cocaine was included in Schedule II because it was (and sometimes still is) used by ophthalmologists in treating eye disease.

The Drug Enforcement Administration (DEA) was created as a result of the Comprehensive Drug Abuse Prevention and Control Act. The DEA was