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ABSTRACT

This monograph presents the history and epidemiology of crack cocaine and demonstrates aspects of the drug and its use that are unique in the field of prevention. Problems specific to crack cocaine that require specifically focused prevention strategies are examined and recommendations for a crack cocaine research agenda are provided. Chapter 1 examines crack cocaine epidemiology, including sources of data, a summary of national survey data, and observations derived from other data sources. Chapter 2 discusses drug abuse patterns, first looking at general drug abuse patterns and then examining crack cocaine use patterns. Chapter 3 focuses on defining drug use prevention, reviewing prevention strategies of the 20th century, contemporary drug use prevention programs, and preventing crack cocaine use. Chapter 4 discusses the research agenda for crack cocaine use prevention. It describes etiologic and epidemiologic studies, evaluation research, and information exchange. The report concludes that there must be continued research to assess the efficacy of prevention efforts and to communicate the process and the outcomes of successful prevention efforts. References are included. (ABL)

Office for Substance Abuse Prevention

OSAP Prevention Monograph-9

CRACK COCAINE: A CHALLENGE FOR PREVENTION

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Alcohol, Drug Abuse, and Mental Health Administration

CG

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Foreword

The crack cocaine epidemic is unprecedented and presents daunting challenges to prevention efforts. Crack cocaine use goes against larger trends in drug abuse: it began and then skyrocketed in the mid-1980s, when overall cocaine use was dropping. Recent survey data found that, while the number of current cocaine users decreased in 1990, the number of current crack cocaine users remained stable (1990 National Household Survey on Drug Abuse, NIDA).

However, there is reason for some optimism: the 1990 National High School Senior Drug Abuse Survey reported that crack cocaine use by high school seniors decreased significantly between 1989 and 1990. In 1990, 0.7 percent of seniors had used crack cocaine within the past month, which is half of the 1989 rate of 1.4 percent. Annual use of the drug also decreased significantly by about two-fifths, from 3.1 percent in 1989 to 1.9 percent in 1990.

On December 19, 1990, HHS Secretary Louis W. Sullivan, M.D., released results of the department's 1990 National Household Survey on Drug Abuse. He said that "despite this impressive news about our progress in reversing our nation's drug using habits, many pockets of serious drug problems remain." For instance, the survey reported nearly a half million current crack cocaine users among the 1.6 million current cocaine users. This led the Secretary to state that "we must reach out more vigorously to this core of persons who are heavy drug users. They no doubt account for a significant portion of the violence, crime, child abuse and other destructive behaviors associated with drug use." (*HHS News*, December 19, 1990, Washington, D.C., p. 2)

Crack cocaine use is concentrated primarily in high-risk, urban communities throughout the country, where its sale in inexpensive single doses has widened the accessibility of the drug; its low cost, ease of administration, and fast, powerful effects have made it a formidable street drug. Unlike other drugs, crack cocaine quickly achieved a high rate of use and addiction among pregnant women and women of childbearing age.

As a result, widespread crack cocaine use swiftly caused social damage on an unprecedented scale. By creating a large pool of addicted, frequently repeat customers, crack cocaine spawned a thriving underground crack cocaine-dealing economy, which attracted many youth in high-risk environments seeking to acquire large amounts of money. This in turn increased crack cocaine dealing, made the drug more available, and created more addicts. Crime rates have risen; users commit crimes for money to buy the drug; crack cocaine often induces violent behavior in users; and young crack cocaine dealers use

violence, especially guns, to protect their turf. This cycle has caused dramatic increases in the murder rates in many cities, and the intensity of street drug-dealing has virtually destroyed many marginal neighborhoods.

Because it is used by so many pregnant women, the drug has resulted in hundreds of thousands of drug-exposed babies, who are frequently premature and often suffering from nervous system or other damage. Many of these infants will become dependent on the social welfare system because they will require special medical care and counseling and because their lifelong capacities for education and employment will be limited.

Traditional antidrug warnings do not seem to be effective against crack cocaine, although they seem to have some impact if they are coupled with strong anticrack cocaine community organization efforts. Some school-based preventive approaches also seem to have potential, especially behavior-change programs and programs that teach life and refusal skills. Most people who become crack cocaine addicts have prior alcohol or other drug problems, so efforts to identify and channel them into prevention/early intervention programs also have promise. Above all, it is critical to develop effective prevention programs for women of childbearing age and for youth from high-risk environments.

Future prevention efforts can be improved with knowledge gained by further longitudinal studies on the initiation of crack cocaine use; frequency, patterns, and consequences of use; and differences in use patterns by sex, age, and ethnic and racial background.

This volume, the ninth in a series of prevention monographs, was developed by an expert committee hosted by the Institute for Behavior and Health, Inc. It presents the history and epidemiology of crack cocaine and demonstrates aspects of the drug and its use that are unique in the field of prevention. The authors examine problems specific to crack cocaine that require specially focused prevention strategies and conclude with their recommendations for a crack cocaine research agenda.

This monograph represents an ongoing initiative by the Office for Substance Abuse Prevention (OSAP) aimed at preventing the use of crack cocaine by young Americans. It reaffirms OSAP's continuing commitment to finding solutions to the problems associated with alcohol and other drug use. We hope that the knowledge presented in this volume will stimulate initiatives and actions by citizens, communities, lawmakers, researchers, and others to prevent the use of all harmful drugs.

Elaine M. Johnson, Ph.D., Director
Office for Substance Abuse Prevention

Preface

The highly addictive nature of smokable ("crack") cocaine predisposes it to rapid spread, while its association with violence, pregnancy complications, and neonatal effects underscores the need for concerted new efforts. Since the crack cocaine epidemic began in the mid-1980s, concerned professionals and communities throughout the Nation have been grappling with the implications of these factors for both treatment and prevention.

Understanding the history of alcohol and other drug (AOD) problems in the United States and the specific epidemiology of crack cocaine is essential to prevention strategies. Many strategies for preventing use of crack cocaine overlap with traditional efforts to prevent *any* illicit drug use, including education and parent and community involvement. However, crack cocaine is distinguishable from other frequently used drugs by its strong appeal to urban youth and its unique behavioral effects; it therefore presents an obligation to devise additional, specific prevention efforts. Learning to prevent the use of crack cocaine may also help health professionals prepare for future challenges from drugs of similar high potency and addictiveness, cost, and availability.

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Introduction: The Crack Cocaine Story

The emergence of crack cocaine in the mid-1980s signaled a dramatic new challenge to nationwide prevention efforts. Previous strategies had focused on preventing the initiation of drug use or diverting the progression from experimentation to regular, frequent drug taking. Crack cocaine use prevention, by contrast, would mean changing the behavior of committed drug users and addicts—convincing this skeptical population that crack cocaine is a substantially worse threat to their survival than drugs they had previously taken. Although crack cocaine may be a gateway or initial drug for some, most new crack cocaine users are long-term, heavy users of illicit drugs and alcohol. Many lessons have been learned in the last decade about prevention, but the challenge remains: reducing crack cocaine use depends on the development and implementation of imaginative new responses to the special demands of the populations most at risk.

The crack cocaine epidemic in the United States emerged in 1985 with great speed and power, becoming a major national concern within a year. Three unusual phenomena distinguished crack cocaine from previous illicit drugs. First, the crack cocaine epidemic occurred during a long-term downward trend in overall drug use in the United States (NIDA 1989b). Second, cocaine was not a new drug; what was new was that cocaine was being smoked, instead of snorted or injected. Third, crack cocaine use—in contrast to the use of alcohol, marijuana, and snorted cocaine (the major American drugs of abuse prior to the onset of crack cocaine)—was concentrated primarily in urban areas among ethnic/racial populations and was associated to an unusual degree with violent crime.

Historical Perspective

Although crack cocaine use is a recent phenomenon, the search for a new and more intense high is part of a long tradition. The social response to the use of crack cocaine has roots in centuries of American drug use and abuse. It is difficult to understand the recent crack cocaine outbreak without a brief review of this history. The United States has had two major drug epidemics, the first from roughly 1885 to 1915 and the second from about 1965 to the present (Musto 1987). Early in each epidemic cocaine was viewed benignly; late in both epidemics it became the primary focus of national concern (Musto 1990). Knowing the U.S. history of drug use and the specific role of cocaine in this history helps place the current efforts to prevent the use of crack cocaine in perspective.

The problems and policies of alcohol use have often been intertwined with those of other drugs. This is especially evident today. The Office for Substance Abuse Prevention (OSAP), for instance, introduced the acronym *AOD* to highlight the importance of a unitary commitment to the prevention of "alcohol and other drug" use or problems by youth (OSAP 1989).

The United States has always had a serious alcohol problem; peak per capita consumption occurred in the 1820s or earlier (Nelson 1990). Since the middle of the 19th century, the United States has also had a drug abuse problem. For most of the Nation's history, this country has been a world leader in rates of drug use and, as a consequence, in initiatives to solve drug use problems (Musto 1987).

The origins of American alcohol use can be traced to the rum trade in the 18th and 19th centuries, which involved the United States and the Caribbean in a triangular slave trade with Europe and Africa (Mintz 1985). The whiskey trade of the same period was one of the major ways U.S. grain was shipped over the Appalachian Mountains from the Midwest to the Eastern population centers. Rum and whiskey were the primary forms of alcohol consumed in the early years of the Nation. Looking back on this era, one contemporary author has called the young Nation *The Alcoholic Republic* (Rorabaugh 1979). The increase of wine and beer consumption in the United States in the 19th century reflected both the influence of new immigrant cultures, many of which traditionally used wine and beer, and efforts to curb the use of distilled spirits.

The early decades of the 19th century brought the temperance movement, which, along with the abolition movement, was at the heart of the reforms of that era. By the time of the Civil War, the American temperance movement rivaled the abolition movement in size and tenacity, with deep roots in both medicine and religion (Nelson 1990).

Benjamin Rush, a distinguished physician and statesman, first proposed the disease concept of alcoholism in the late 18th century (Rush 1791). The empathy of Rush's view contrasted with the harsh and moral tone of many proponents of temperance (Nelson 1990). American religious groups such as the Seventh-Day Adventists, the Mormons, and the American Protestant Christians (including the Congregational, Methodist, Baptist, and Quaker denominations) struck an especially moralistic anti-alcohol tone in the 19th century.

The influence of immigrants on developing American patterns of alcohol and other drug (AOD) use and the influence of medicine and religion on national responses to the use of intoxicants are enduring features of the American experience with intoxicants (Musto 1987). The major pattern over the past 200 years has been alternation between permissiveness and restriction. Permissive periods are associated with increased use of intoxicants,

resultant public health problems, and calls for restriction of access to intoxicants. Once restrictions are applied the problems seem to decline, and calls for renewed permissiveness are entertained (Musto 1989).

The drug problem in the United States has never directly involved a majority of the population in use, but neither has the Nation ever been without AOD problems. Within the overall cyclical pattern of American p[er]missiveness and restriction, there has been a persistent trend toward lo[wer] drug use over many decades and a growing awareness of the dangers of illicit and several licit drugs. This trend is most clearly seen in national attitudes toward alcohol and in use rates of this licit drug.

The simplest explanation for the pre-eminence of the United States on the worldwide chemical dependence scene is that Americans have always valued the freedom of individual control over personal behavior and a diversity of personal beliefs on the one hand and conformity to community values on the other. This fundamental dialectic may help account for the recurrent cycles of permissive and restrictive attitudes toward AOD use.

In the early decades of the 19th century, the per capita consumption of alcohol began to decline, with the sharpest fall in the 1830s in reaction to the first of three waves of the American temperance movement. The second wave of the temperance movement was well under way by the end of the 19th century. This wave was associated with the passage of many State and local laws prohibiting alcohol consumption, setting the stage for national prohibition. The third temperance wave led to the passage of the 18th Amendment to the Constitution and the implementing legislation, the Volstead Act. These laws, passed in 1919, created national alcohol prohibition from 1920 to 1933. Longitudinal profiles of U.S. alcohol consumption indicate steady yearly reductions beginning about 150 years ago, interrupted only by a sudden drop in consumption during Prohibition and a compensatory increase between 1933 and 1982. (Even at its peak in 1982, however, per capita consumption did not approach consumption in earlier times.) In 1982, per capita consumption reached approximately the level observed just before Prohibition, and the slow and steady decrease that began in the mid-19th century resumed. Per capita alcohol consumption in the United States now stands in the middle of the rates of consumption of industrialized nations.

Drug abuse on a per capita basis probably peaked during the late 19th century, when such drugs as morphine and cocaine were unregulated and widely used throughout the United States. During the Civil War, in particular, the painkilling properties of morphine became clear, but its abuse potential was not understood until later. Similarly, the newly developed hypodermic syringe, then significant to medical care, would one day become significant to drug abuse as well. Patent medicines, most containing opiates and alcohol,

came into common usage. Heroin was introduced in 1898 as a cough syrup, morphine was sold as a soothing syrup for colicky babies, and Coca-Cola, before 1900, contained cocaine. Soon heroin would be encouraged by some as a "safe" alternative to morphine, as well as a treatment for alcoholism.

The American experience in that era suggested some of the problems of legalization. Concern about widespread drug addiction led to a demand for regulation of these drugs in the final decades of the 19th century and the first decade of the 20th century, with cocaine abuse being the catalyst of this development (Musto 1989). A national movement against nonmedical drug use saw the passage of the Pure Food and Drug Act in 1906; a truth-in-labeling law; and the Harrison Narcotics Act in 1914, which was a prohibition law except for strictly medicinal uses. The Harrison Narcotics Act almost totally restricted the use of addicting drugs to medical prescriptions. Through the courts' interpretation of those laws and subsequent legislation, U.S. physicians were forbidden to prescribe potentially abused drugs except to treat medical illness. Doctors could no longer prescribe cocaine, heroin, or other nonmedical abused drugs to addicts except as part of short-term detoxification programs, although a few clinics providing heroin continued in operation through the late 1920s (Musto 1987).

The national consensus for control of alcohol and other drugs peaked in the first two decades of the 20th century, with cocaine singled out for particular attention. There were limits to such consensus, however, as the national reaction to the Depression eroded support for alcohol prohibition. Repeal of national prohibition in 1933 was, however, limited to alcohol, which was perceived as warranting a more permissive policy than other drugs. To underscore this point, the increase in marijuana use in the 1930s did not lead to any call for relaxation of antidrug laws as the repeal of alcohol prohibition swept the Nation (Musto 1987).

The second American drug abuse epidemic began in about 1965, with a reglamorization of drug use. The first call, from a few advocates in some of the Nation's leading universities, was for the use of hallucinogenic drugs such as LSD and psilocybin to "expand consciousness." A few years later, marijuana emerged as the primary drug in this new, more permissive climate. The idea of drug use as an adventure, epitomized by Timothy Leary's exhortation to his students to "tune in, turn on, and drop out," fell on the fertile ground of the Baby Boom generation, then entering their teenage years. Drug use became a central element of the "youth culture" as antidrug sentiments were portrayed as unscientific and old-fashioned.

When the Federal Government aggressively entered the effort against drug abuse in 1971, the focus was on heroin addiction and urban crime. Within a few years that focus became Federal policy, reflecting the consensus of drug

abuse experts that marijuana and cocaine were "soft drugs" and that national concern should be directed toward "hard drugs" such as heroin. Left out of this calculation were such newly synthesized drugs as LSD and PCP, which came to be widely used in this era, although by a largely different population than those who used heroin. The relaxation of historically negative views about marijuana and cocaine set the stage for the explosive growth in the use of these drugs in the early 1970s.

Before 1960, the primary forces discouraging nonmedical drug use in the United States were rooted in clinical medicine and religion and were articulated by law enforcement. Since then, the imperative to reduce AOD use has broadened. In large part, the national counterreaction to the permissive trend of the late 1960s and early 1970s came not from the Federal Government but primarily from middle-class parents who were alarmed by the negative effects of drug use, especially marijuana use, by their children. These parents banded together and expressed their feelings through the political process. They were incensed by some of the scientific and government leadership in the drug abuse field, because these leaders repeatedly told the Nation that marijuana was not a serious drug problem. By the end of the 1970s many Americans held the view, based on their own experience, that marijuana use, even relatively infrequent use, was a serious health hazard.

In one of the great ironies of drug abuse history, the parent movement (the contemporary counterpart of the 19th-century temperance movement) initially rejected the advice of many drug abuse experts, who until the 1980s were relatively permissive about the use of marijuana and cocaine. This paralleled the attitudes of the pro-marijuana movement of a decade earlier that rejected contemporary experts on drug abuse for their old-fashioned hostility to "responsible" drug use. The parent movement involved the active organization of parents community by community for several purposes: to lend each other support and assistance with drug issues and problems in their own families; to educate themselves and their families about the dangers of individual drugs; and to develop and implement a policy of intolerance for drugs in schools, in the workplace, and in the community at large. Today, there is widespread consensus among activists and experts on the negative effects of drugs and the importance of societal rejection of nonmedical drug use, just as there was at the end of the previous drug epidemic (Musto 1989).

Fast on the heels of the parent movement, the importance of healthful lifestyles captured public attention. Increasingly, the prevention of AOD problems has been central to the healthful lifestyle movement. In this larger movement (as in AOD abuse itself) the United States is at the forefront of worldwide changes in human behavior (DHHS 1990, Sullivan 1990).

In spite of these budding movements, in the late 1970s cocaine emerged as the new "safe high," with advocates drawn from some of the same ranks that had earlier trumpeted the "virtues" of marijuana use. Cocaine was more expensive than marijuana, and the effect was short-lived, so users wanted a lot of it. Powdered cocaine enjoyed a brief vogue as the champagne of drugs in the late 1970s and early 1980s. As cocaine began to rival marijuana as the most commonly used illicit drug in the United States, serious problems emerged and the parent and health movements set their sights on cocaine.

Use of powdered cocaine peaked in 1985 in the United States. Snorted cocaine causes the blood vessels in the nose to constrict, which eventually causes the disintegration of nose cartilage seen in chronic users. Just as powdered cocaine use was peaking, freebase (smokable) cocaine appeared. An extremely dangerous crystalline form of cocaine, freebase is extracted from the powdered form with a highly flammable agent, usually ether (Siegal 1985).

Why Crack Cocaine Is Different

The first reported use of crack cocaine was in the Bahamas in 1983 (Kleber 1988). By 1985, it was readily available on the streets of New York City (Hermann 1988, Honer et al. 1987) and spreading to other parts of the United States. As it reached each community, its rapid and intense high and its addictive capacity instantly marked it as a drug of major concern.

The hallmark of crack cocaine, perhaps more than any other drug, is its ability to induce persistent, intensive drug-seeking behaviors. Crack cocaine offers its users an intense high in a very short time. A drug absorbed through the lungs after smoking quickly reaches the brain, rapidly producing the sought-after high. Cocaine taken intranasally attains a peak high in 10 to 15 minutes and lasts about an hour; intravenous use peaks in 3 to 5 minutes and lasts 30 to 45 minutes; but a crack cocaine high is achieved in 10 to 15 *seconds* and lasts about 15 minutes. Crack cocaine users typically smoke repeated doses or "hits" of the drug to extend the high, sometimes for many hours (Chatlos 1988). Crack cocaine is absorbed over the entire surface of the lungs, an area roughly the size of a football field. The dosing of snorted cocaine is self-limited by reactive constriction of nasal blood vessels, but because there is no similar shutoff process for crack cocaine, a far higher dosage is permitted to reach the brain far more quickly.

In the brain, crack cocaine directly affects the pleasure centers, which are thought to be controlled primarily by the neurotransmitter dopamine. Animal studies have shown that the reinforcing properties of cocaine are enormous, producing a powerful craving that leads the user to abandon all else in a compulsion to obtain more of the drug. Heavy crack cocaine users often forgo

food and sleep to stay high, and they frequently suffer malnutrition and exhaustion as a result (Cole 1989).

Accompanying the craving for the drug is the euphoria that users say it produces. The intensity and rapid onset of euphoria, combined with the strong craving that may develop, account for crack cocaine's high potential for addiction.

Crack cocaine is capable of producing both a physical and a psychological addiction. As tolerance for the drug develops, the user needs more and more crack cocaine to experience the same degree of effects. The effect that crack cocaine produces may be accompanied by confusion, increased heart rate and blood pressure, and sweating. Withdrawal from the drug after prolonged use produces feelings of anxiety, irritability, insomnia, and depression. Some users find these sensations frightening and choose to avoid the drug because of its powerful side effects (Chatlos 1988).

Smoking crack cocaine also heightens certain important effects that are relatively mild when cocaine is snorted—increased heart rate, blood pressure, and temperature—which can lead to seizures, heart attack, stroke, and death (Chatlos 1988, Cohen 1985). A fatal overdose is possible with even a small amount of crack cocaine at the first use of the drug. Medical effects of crack cocaine use include chronic respiratory problems (most commonly a persistent cough), chronic fatigue, and insomnia (Schwartz 1989). Long-term psychological effects of crack cocaine use include behavior and personality changes including impulsive, even violent, behavior and paranoia. Panic attacks (Price and Giannini 1987) are also occasional reactions to chronic crack cocaine use. All of these effects adversely influence a crack cocaine user's relationships, responsibilities, and overall physical and mental health.

Crack cocaine has a high entrepreneurial attraction. It is sold in affordable amounts and produces its own repeat clientele through its addictive properties. Although street-level dealers, usually youth, may start out as nonusers, many become addicted as a result of crack cocaine's ready availability and peer encouragement. Initial profits may dissipate, ultimately leaving the dealer both an addict and in serious debt. Especially in large urban centers, this situation is extremely volatile, typically contributing to a pattern of crime and violence as well as to family and community disruption.

Conclusion

Placed in the context of the history of drug use in the United States, crack cocaine use and the epidemic of the mid-1980s appear to be further episodes in the enduring search for more intense drug experiences by young adult and

adolescent populations. However, in this episode the drug is especially cheap, addictive, and associated with dramatic psychological, physiological, and social consequences. The history of drug abuse suggests that, as the use of crack cocaine diminishes with time, it is likely to be replaced with another potent drug, also initially perceived as manageable. Given this likelihood, and the heavy toll a drug such as crack cocaine can take on American families and communities, it is essential to study the lessons of the crack cocaine epidemic to avoid repeating them.

CHAPTER 1

Crack Cocaine Epidemiology

Epidemiology is the study of the distribution and determinants of diseases, injuries, and health-related behaviors in human populations (Mausner and Bahn 1974). With respect to crack cocaine, epidemiology is the study of the extent and trends of the use of the drug, the correlates of crack cocaine use, and the factors that influence the rates of crack cocaine use in various population groups and subgroups. Epidemiology deals with the "why" as well as the "how" of diseases and health-related behaviors, including drug abuse (Horstmann 1962).

Crack cocaine use has been described as producing dramatic behavioral changes and being capable of inducing violent behavior among users. The association of violence with cocaine use has been described by several investigators as inherent in the pharmacologic effects of cocaine (Brody 1990). The association of aggression with drug use has also been described for such potent new synthetic drugs of abuse as phencyclidine (PCP) and methamphetamine.

The overall decline in both licit and illicit drug use in the United States over the last decade has been countered by the fact that the number of current crack cocaine users has remained constant (NIDA 1991). In recent years, crack cocaine use has led to a sharp rise in cocaine-related problems including infant mortality, violence, psychotic reactions, child abuse and neglect, accidents, and crime, and has heightened as well the demand for drug abuse treatment. Particularly troubling has been the rate of crack cocaine use among young women; in some studies rates of entry into treatment for crack cocaine use were equal for men and women (Wallace 1987). The use of crack cocaine by women came to be reflected in a tragic increase in the number of babies exposed to crack cocaine and an associated reduction in maternal ability to care for these children after birth (Chasnoff 1988). Because of its virulent abuse potential and the associated health and social consequences, crack cocaine was at the cutting edge of the U.S. drug abuse epidemic as the 1990s began.

Crack cocaine epidemiology has been at the center of an important controversy about how the Nation keeps track of its drug problem. The evidence from the National Household Survey data (NIDA 1991) and the Drug Abuse Warning Network (DAWN) (NIDA 1989b) indicates that crack cocaine use, along with all illicit drug problems, is waning. However, there are indications

that crack cocaine use in inner city and high-risk populations remains high (Smart 1991). The relationships among race, gender, social class, previous behavior (including drug use), and crack cocaine use require further clarification.

Sources of Epidemiologic Data on Crack Cocaine Use

Four epidemiologic resources offer valuable information about the national drug experience. None frames a complete picture, but taken together they provide the best available view of drug use in this country and provide more information about drug use than has been gathered by other governments around the world.

- **The National Household Survey, National Institute on Drug Abuse (NIDA).** The National Household Survey is conducted regularly and is a nationally representative sample of Americans aged 12 and older living in households. It relies on self-report of drug use (NIDA 1991).
- **Monitoring the Future (the High School Senior Survey), University of Michigan.** The High School Senior Survey is an annual survey sponsored by NIDA of a nationally representative sample of 8th and 10th graders and high school seniors. It, too, uses self-report to assess drug use (Johnston et al. 1991).
- **Drug Abuse Warning Network (DAWN), NIDA.** DAWN monitors the records of more than 700 hospital emergency rooms and 85 medical examiner offices in 21 major metropolitan areas throughout the country. The hospitals report on emergency room admissions in which drugs are implicated; the medical examiners report on drug-related deaths (NIDA 1989b). Reporting sites are geographically diverse and representative of the Nation and of the communities in which they are located.
- **Drug Use Forecasting (DUF), National Institute of Justice.** DUF was introduced by the National Institute of Justice in New York City in 1987 (see Wish 1990). As of April 1990, 25 cities participated in the program: New York, Boston, Philadelphia, Washington, Cleveland, Atlanta, Birmingham, Fort Lauderdale, Miami, Detroit, Indianapolis, Chicago, St. Louis, New Orleans, Omaha, Kansas City, Dallas, Houston, San Antonio, Denver, Phoenix, Portland, San Jose, Los Angeles, and San Diego. By means of self-report and drug tests, DUF provides local estimates of drug use among arrestees, with the intent

of monitoring trends in drug use patterns and alerting local agencies to the availability of new illicit drugs among criminal justice populations (NIJ 1990). However, neither the subjects volunteering for drug testing at each site, nor the national sample of reporting sites, can be characterized as representative.

To supplement these national data bases, this report draws from several other data sources: Phoenix House, a large New York City treatment program; the National Cocaine Hotline (1-800-COCAINE), a national information and referral service; and NIDA's Community Epidemiology Work Group (CEWG), a group of 20 epidemiologists from State and local governments throughout the United States who meet twice a year to assess recent drug abuse trends. Summary CEWG observations are published biannually (CEWG 1990).

Summary of National Survey Data

Although there is a growing body of information about the epidemiology of crack cocaine use, much remains to be learned. Researchers, like all others, needed time to recognize the importance of crack cocaine, its users' jargon and method of administration sufficiently to frame appropriate questions and design useful studies. A potential difficulty in the High School Senior Survey lay in the fact that the study did not reach significant pockets of at-risk populations such as high school dropouts, and runaway or homeless youth. In the case of much of the survey data making use of drug-testing results, e.g., criminal justice reports, such drug testing does not discriminate between use of powdered cocaine and crack cocaine smoking. Drug test data must be supplemented by self-report to make this important distinction. For all of these reasons the national cocaine use data provide, as yet, only partial information about crack cocaine epidemiology.

Differences in sampling strategies, the structure of questions asked, and the populations from which samples are drawn may create an appearance of conflict between national surveys. For example, the National Household Survey estimates that, of the approximately 201 million Americans living in households in 1990, there are 1.6 million current cocaine users (NIDA 1990). In contrast, data from DUF have been used to estimate a total of 1.3 million cocaine users among criminal suspects in 25 metropolitan areas (Wish 1990). Because DUF is not a nationally representative sample, this analysis was confined to the 25 cities in which DUF operated. This estimate for only these metropolitan areas is substantially larger than the NIDA estimate for the whole country. Projection from the household survey is from a national probability sample using a comparatively stable population; projection from DUF relies on a portion of the criminal justice population only in only these

25 metropolitan areas. The household survey data is based on self-report, DUF on a combination of urinalysis findings and self-report.

Overall, the previous-month use of all drugs reported in the National Household Survey dropped by 44 percent between 1985 and 1990. Previous-year use of cocaine, as reported by the survey, dropped 50 percent, from 12 million in 1985 to 6.2 million in 1990. Trends in past-month use of cocaine for those 18 to 25 years old (the highest using age group) and for all ages 12 and over from 1974 through 1990 are shown in figure 1. Estimated weekly users has varied by a factor of 33 percent, from 647,000 in 1985 to 862,000 in 1988, to 662,000 in 1990. Weekly or more frequent use of cocaine continues to represent a significant problem, suggesting the existence of a significant cocaine-dependent population. The 1990 National Household Survey showed a drop of approximately 50 percent from 1988 in the use of cocaine by women of childbearing age (15–44) which, because this drop was sharper than the drop in other population groups, suggests a response to public health education about the great danger of cocaine use during pregnancy in the general female population.

Along with the overall decline in cocaine use, the National Household Survey reveals data specifically about crack cocaine use. Approximately 1.4 percent of the survey population aged 12 and older reported having ever used crack cocaine, with about 0.5 percent reporting having used crack cocaine during the previous year. This number translates into about 1 million past-year crack cocaine users in the United States in 1988 and 1990. The number who reported having used crack cocaine within the preceding 30 days also remained stable between 1988 and 1990. Past-year use of crack cocaine in 1990 was highest among males (0.8 percent), African Americans (1.7 percent), the unemployed (1.3 percent), and young adults aged 18 to 25 (1.3 percent). By age group, the highest rate of crack cocaine use was the same as for other drug use, peaking in the 18- to 25-year-old age group at 1.4 percent.

As shown by tables 1 through 4, the National Household Survey estimates of use are fairly evenly distributed among racial populations for most drugs, with the possible exception of crack cocaine. Among African Americans, the data suggest that crack cocaine use occurs with highest rate among 26- to 34-year-olds. Among Whites, crack cocaine use is highest among 18- to 25-year-olds. One-third of all White cocaine users use crack cocaine, while more than half of all African-American cocaine users use crack cocaine.

Epidemiological data about racial differences in rates of crack cocaine use are important, but they can foster stereotypes. In all cases, it is important to emphasize that there is a nondrug-using majority in each ethnic group. For instance, although the rate of crack cocaine use appears to be somewhat higher

for African Americans than for Whites, current data also indicate that, in 1990, 98.3 percent of African Americans did *not* use crack cocaine.

The National Household Survey oversampled the Washington, DC, metropolitan area. Lifetime crack cocaine use was higher in Washington than in other large urban areas (2.9 percent versus 1.9 percent), but the difference was not statistically significant. In low-income urban areas of Washington, crack cocaine use was 4.0 percent for those aged 12 and older.

The University of Michigan Institute for Social Research has conducted an annual survey of high school seniors since 1975, sponsored by NIDA (Johnston et al. 1991). This drug abuse survey has the largest sample size of any of the national surveys and the most frequent intervals for study. Since 18-year-olds are a high drug-using segment of the population, the High School Senior Survey has been a cornerstone of the Nation's efforts to track drug use trends. It first asked about crack cocaine use in 1987, when 5.4 percent of seniors reported ever having used crack cocaine. That same year, 15.4 percent of seniors reported using cocaine in any form at some time in their lives. In 1987, 3.9 percent of seniors reported using crack cocaine within the previous year, 1.3 percent reported crack cocaine use in the preceding month, and 0.1 percent reported daily use of crack cocaine in the month before the survey.

From 1987 through 1990 there was a steady decline in the rate of use both of cocaine and of crack cocaine among high school seniors. In 1990, 9.4 percent of seniors reported any cocaine use in their lifetimes and 3.5 percent reported ever having used crack cocaine. In the 1990 survey, 1.9 percent reported crack cocaine use within the previous year, 0.7 percent in the previous 30 days, and 0.1 percent reported daily crack cocaine use during the 30 days before the survey. The declines in crack cocaine use in this population were similar to declines seen over the same time period for other illicit drug use.

In addition, these data revealed that African-American seniors had dramatically lower drug use rates than White seniors. Cocaine use was twice as frequently reported by White males as by African-American males (crack cocaine use was not assessed separately), and White females were about three times as likely as African-American females to report having used cocaine. In fact, the data suggest that African-American students were much less likely to use any drugs or to approve of any drugs than Whites, no matter what their socioeconomic background. Although the heaviest drug use by youth is believed to be among dropouts, the findings from the University of Michigan survey reflect the strength of individual will not to use drugs and the importance of prevention efforts in the schools.

The Michigan study also surveyed college students and high school graduates 1 to 10 years after high school graduation. Among college students, the percentage reporting ever having used crack cocaine fell from 3.3 percent

in 1987 to 1.4 percent in 1990. Among college graduates the percentage reporting crack cocaine use in the preceding year fell from 1.3 percent in 1986 to 0.6 percent in 1990. The decline in annual prevalence of crack cocaine use from 1989 to 1990 was statistically significant. These declines in use of cocaine (and crack cocaine) occurred in direct proportion to increases in perceived risk of using cocaine over the years 1987 to 1990, during which time there was no decline in perceived availability of cocaine among this population. This decline highlights the importance of health education as a critical part of prevention efforts attempting to reduce the use of crack cocaine.

In 1988, DAWN data were gathered from 770 emergency departments in 25 metropolitan areas and 87 medical examiners in 27 metropolitan areas throughout the continental United States (NIDA 1989b). An episode report was submitted for each drug abuse patient who visited a DAWN emergency room and each drug abuse death encountered by a DAWN medical examiner. Each report included demographic information about the patient or deceased and information about the circumstances of the drug abuse episode. Crack cocaine-related episodes were not specifically mentioned in these data, but they were included in reported cocaine-related episodes (see figure 2).

Cocaine was the most frequently involved drug in the reported emergency room data. Thirty-nine percent of reported drug-related episodes involved cocaine; the next highest mentioned category was alcohol-in-combination (29 percent). DAWN data showed a greater concentration of cocaine-related problems among African Americans than did the National Household Survey. Of the 62,141 total mentions for cocaine-related problems appearing in hospital emergency rooms in 1988, 56 percent were for African Americans, of whom 33 percent were female. Whites were estimated at 26 percent of total mentions in DAWN reports, and 32 percent of White cocaine users were female. Hispanics accounted for the remaining 18 percent of cocaine-related problems. Cocaine-related emergency room mentions were greatest in the 18- to 29-year-old age range (see figure 3).

Observations From Other Data Sources

Cocaine was the drug most often mentioned in data from all of NIDA's CEWG cities (CEWG 1990). CEWG cities reported a varying supply of cocaine, stable or increased prices, and decreased purity of cocaine. Cocaine powder was less available in many areas than crack cocaine. It is unknown whether this shift to crack cocaine from powdered cocaine was caused by supply or demand factors or by both.

Data for those seeking treatment at Phoenix House, a large New York City drug treatment center, indicate that cocaine use increased dramatically after

1972 and that crack cocaine was still a major drug of abuse by those seeking treatment in 1990. In 1972 there was no report of cocaine as a primary drug of abuse, while approximately 450 of those seeking treatment reported using heroin. In 1982, cocaine was reported as the primary drug problem by 200 persons seeking treatment, and heroin use by 400. In 1986, more than 900 people seeking treatment reported that powdered cocaine was their primary drug problem, but only nine (all men) reported crack cocaine, and reports of primary heroin use had dropped to fewer than 50 persons. By 1990, the number of users seeking treatment for crack cocaine abuse had risen to more than 800 (486 men, 321 women), and the number of users seeking treatment for powdered cocaine and heroin had each dropped to below 80. Crack cocaine was still an issue of epidemic proportions in this urban treatment center in 1990.

One to two percent of live births in the United States (30,000 to 50,000) were estimated to be babies exposed to crack cocaine in 1988 (Chasnoff 1988). Crack cocaine was being used by young women who frequently were unable to care for themselves or their children. Crack cocaine-associated child abuse and neglect was described in the media as having reached an alarming rate (*New York Times* 1988). Child welfare agencies, private and public programs, and the medical community were unable to care adequately for babies exposed to crack cocaine or to handle the social consequences of maternal crack cocaine use (Besharov 1989).

The personal consequences of crack cocaine smoking may be greater than those of intranasal cocaine and other drug use. Compared to intranasal cocaine users, youth using crack cocaine are less able to refuse an offer of cocaine, are more preoccupied by thoughts of cocaine, have more dreams about cocaine, are more likely to develop tolerance to the drug, escalate weekly use more quickly, binge on their supply of the drug and have prolonged binges (longer than 24 hours), and are less likely to be able to abstain from use for 30 days (Schwartz et al. 1991). In addition, medical problems and criminal activity are more likely among crack cocaine users. Table 5 shows that an adult sample of crack cocaine users (NIDA 1989a) evidenced a greater number of violent characteristics and psychotic symptoms than did freebase, intravenous, and intranasal cocaine users. On the other hand, it remains unclear whether psychosocial difficulties of this magnitude precede, or are stimulated by drug use. A body of literature now exists describing the relationship between early dysfunctional behavior and later substance abuse (Hawkins et al. 1987). It is unknown, however, to what extent that abuse exacerbates, or simply gives expression to, existing disorder.

A survey of cocaine users who called the National Cocaine Hotline suggests changes in patterns of cocaine use from the early 1980s to the early 1990s. In 1983, 50 percent of the hotline callers reported being college educated and only

16 percent were unemployed. By 1990, only 32 percent of the callers were college educated and 53 percent were unemployed. These data may be associated with the lower cost of crack cocaine and sociocultural factors in the selection and maintenance of use of selected drugs.

Conclusion

Reported use of cocaine in the United States is declining, according to several national epidemiologic surveys. However, these data may mask a large subset of crack cocaine users among inner city populations and adolescent and young adult groups in high-risk environments. Such intensive cocaine and crack cocaine use is highly associated with medical problems, criminal activities, and family and community disruption. These important, but still sketchy, epidemiological data suggest the potential benefits of targeted prevention and health care efforts focused on crack cocaine use.

CHAPTER 2

Drug Abuse Patterns

Crack cocaine use prevention is in part predicated on some common principles of how drug abuse occurs and progresses. These principles are discussed in this section, followed by a more specific discussion of crack cocaine patterns.

General Drug Abuse Patterns

Drug use usually begins between the ages of 12 and 20; the most severe drug use often begins at the younger end of this range. There is a characteristic sequence to drug use in the United States today. Typically, young people begin drug use with alcohol and tobacco (the two gateway drugs that are legal for adults but illegal for youth) and progress in stages through marijuana to cocaine (currently the gateway illegal drugs for all ages in the United States), perhaps to an involvement with other drugs such as PCP and heroin that act as end-stage drugs in the United States today (DuPont 1984, Kandel et al. 1985). (Exceptions to this pattern are discussed below under "Crack Cocaine Use Patterns.")

Recent research has confirmed the widely observed fact that all youth are not equally vulnerable to drug abuse. A variety of still poorly understood factors place youth at high risk, including family history of drug abuse and possible genetic factors. However, drug use vulnerability is not a simple matter of nature over nurture. Environmental factors, including availability of drugs and acceptance of drug use in the young person's family, peer group, and community, play a powerful role in drug-using behavior for all ages. In addition, involvement with drugs is more likely among youth who are at higher risk-taking levels, are focused on the present rather than the future, are alienated from adults, and feel relatively impervious to punishment. These factors were explored in detail in an earlier report, *Stopping Alcohol and Other Drug Use Before It Starts: The Future of Prevention,* published by OSAP in 1989.

The particular effect of a drug and the route of administration can also play an important role in its use patterns. Some drugs are characterized by relatively low probabilities of progression to addiction. Alcohol, which is swallowed, has the lowest risk of progression from occasional to frequent use of any commonly used drug. Tobacco, which is smoked, has one of the highest rates of progression to addiction among users. Marijuana falls between

cigarettes and alcohol in this regard. Intravenous heroin use and smoking cocaine are unusually reinforcing, and therefore addicting, drug-using behaviors.

Although many youth do not use any illegal drug, a large percentage of those who do will stop use spontaneously after only a few occasions. Other youth progress slowly or rapidly from experimental use to heavy, frequent drug use. For those who use intensely, pathways out of dependence can include formal treatment (when available and affordable) and mutual support systems. The same factors that influence the likelihood of a youth's trying an illegal drug also influence the likelihood of a youth's intensifying drug use to the point of loss of control, the hallmark of addiction. Youth in high-risk environments are more likely, if they use drugs, to progress to intensified use than are lower risk youth. For many of these heavy users, recovery from addiction begins with a crisis in their lives precipitated by their drug use. This crisis is called hitting bottom and often involves a confrontation with the criminal justice system. For others, a series of crises may be necessary before they are willing to try to change their behaviors.

Crack Cocaine Use Patterns

There are exceptions to the general pattern of incremental drug abuse initiation and intensification; for many crack cocaine users, these exceptions are important. Early in a drug epidemic, the users of the newly popular drug are not only youth who are using drugs sequentially but also heavy users of other drugs who are no longer teenagers. It was so in the heroin epidemic of the early 1970s, when some early heroin users were heavy drug users in their twenties and even thirties who had not been exposed to heroin in their teenage years.

Crack cocaine is typically an end-stage drug in the sense that almost all crack cocaine users have previously used alcohol and marijuana and snorted cocaine, usually using these substances excessively and often from very young ages. However, under unique circumstances of community acceptance of drug use, youth may bypass the usual sequence of drugs and begin use with an end-stage drug (Baumrind 1983). This phenomenon is also observed early in drug epidemics. It has been true for heroin and PCP as well as for crack cocaine in some particularly vulnerable communities, including some inner-city neighborhoods. In these situations, crack cocaine (and PCP and heroin, especially early in the epidemics of these drugs) can precede even marijuana use.

Because the crack cocaine epidemic, like the heroin epidemic of the early 1970s, is concentrated in the inner cities and because smoking cocaine is

unusually addicting, the exception of crack cocaine to the general pattern of drug abuse epidemiology is especially important. In the following pages, the challenge to prevention is discussed with such concerns in mind.

CHAPTER 3

Defining Drug Use Prevention

Prevention means stopping a problem before it starts. But what problem is being stopped? Prevention can be applied to any and all drug use (for example, helping young people avoid alcohol, marijuana, and other drug use) or to the use of a particular drug (such as cocaine) or even to a form of a particular drug (such as crack cocaine). Prevention can be applied to intensified use of or addiction to drugs in general or a particular drug; for example, stopping cocaine experimenters from going on to everyday crack cocaine smoking. Prevention can also be applied to behaviors and social problems associated with drug use but not to the drug use itself, such as reducing HIV transmission among heroin users. Prevention is a widely desired goal, but the word is commonly and confusingly applied to many quite different meanings.

Drug prevention can mean preventing all initial drug use or stopping all existing use. Drug prevention can also focus on the consequences of use and not on the use itself.

In the following section we move from a presentation of general drug abuse prevention efforts to a focus on approaches to preventing the abuse of crack cocaine.

Prevention Strategies in the 20th Century: A Review

Stringent Laws as Prevention

The earlier drug abuse epidemics in the United States were dealt with primarily through law enforcement approaches relying on tough laws and long sentences to solve drug use problems. This approach, so seemingly outdated, worked well to limit the use of illicit drugs in the United States from the first decade of the 20th century until the mid-1960s. The same approach (prohibition) was applied to alcohol use between 1919 and 1933. Prohibition effectively curtailed U.S. alcohol consumption but failed to gain sufficient political support.

When the modern drug abuse epidemic started in the 1960s and drug use emerged throughout our society, the traditional get-tough approach was widely regarded as inadequate and even unfair. Severe penalties for

marijuana use, in particular, excited popular sentiment that tough laws were the wrong way to prevent drug use. The popular view held that drug addicts were not criminals at all but sick people who needed treatment, not punishment. The Controlled Substances Act of 1970, the landmark law in the drug abuse field, codified this attitude by distinguishing between drug users and drug sellers. The former got light sentences and the latter received relatively harsh sentences. This was the period when, for the first time in the Nation's history, "demand reduction" became a significant part of the drug abuse equation. Although most of the demand reduction efforts in the early 1970s were treatment and not prevention, there was a growing interest in both preventing and treating drug abuse.

Information as Prevention

In the modern U.S. drug abuse epidemic, initial prevention efforts focused on explaining to Americans, especially teenage Americans, that drugs are harmful. This approach was based on the assumptions that youth exposed to drugs did not know drugs are harmful to them and that they would not use drugs if they were presented with this information. These early efforts focused on messages such as that marijuana use could cause serious problems (e.g., paranoid reactions). Evaluations showed this approach to be disappointing. There was a relentless rise in drug use throughout the United States in the early 1970s, the period when the Nation's schools relied on the information approach to drug abuse prevention.

The information approach was criticized on many grounds, including the charge that this method exaggerated the harmful effects of drug use, especially marijuana use (Goodstadt 1986). The conclusion among experts at the time was that the students knew more about the effects of drugs than the teachers did. The effort to provide information was hindered by many factors that were poorly understood at the time. During this period, authority of all types was being questioned to an unprecedented degree, especially by youth. The state of scientific knowledge about drugs was rudimentary by today's standards. The natural history of drug abuse and the concept of risk were poorly understood. Because the negative consequences of drug use were both delayed and uncertain, they were commonly denied or overlooked. Critics of these early information programs also made much of the health risks from the legal drugs (prescription drugs, alcohol, and tobacco) claiming with some justification that illegal drugs had comparatively benign histories. It often takes years for the problems caused by a drug to become common knowledge.

Information programs failed because they focused largely on long-term consequences of drug-using behaviors rather than on the here and now. Drugs tend to produce immediate pleasure; problems generally occur after a substantial delay. Youth in general are vulnerable to drug use because, as a group,

they are relatively unlikely to consider distant health concerns. The capacity of drug use to disrupt a person's life and functioning and to affect later achievement is a concern for some youth and irrelevant to others. Those who are least concerned about uncertain and delayed consequences are most vulnerable to drug abuse. To whatever varying degrees that disregard for the future has a basis in individual psychophysiology, in problems of family management, in impoverished living conditions, in community disorganization, or in academic failure, the lack of future orientation is a major characteristic of the high-risk syndrome.

Contemporary Drug Use Prevention Programs

Although only a portion of the youth who become involved in the gateway drugs of alcohol, tobacco, and marijuana progress to less commonly used drugs such as crack cocaine, those who never become involved with the gateway drugs are far less likely ever to use crack cocaine. Thus, the first and most important prevention objective is to contain the initiation of any AOD use. Strategies for the accomplishment of that objective have been described in an earlier OSAP publication (OSAP 1989); those strategies are summarized in this section.

Parent Education and Skills Building

These strategies are designed to increase parents' capacities to prevent AOD use by their offspring. In the mid-1960s, at the height of community activism, a project was organized in the inner city of Ypsilanti, MI, providing parent management skills to the parents of preschool children while providing academic training and social skills building to the children. The success of that program in containing dysfunctional behavior in adolescence and young adulthood has been established (Berruetta-Clement et al. 1983, 1984). In the process, significant research support was garnered for the Head Start program while the utility of parent training received somewhat less attention. Nonetheless, a considerable body of research now exists describing the extent to which family mismanagement and discord are associated with adolescent behavior problems including, among others, AOD abuse (Hawkins et al. 1987). Moreover, additional parent training initiatives have been employed successfully to reduce antisocial behaviors in youth whose early aggression marked them as being at risk for later behavior problems (DeMarsh and Kumpfer 1986, Hawkins et al. 1987, Kumpfer 1990). DeMarsh and Kumpfer (1986) and Marsh and Miller (1985) suggest the use of parent training programs designed to increase the parenting skills of drug abuse clients. Such programs have been found to affect parents' self-confidence and their capacities to provide appropriate support and discipline. Kumpfer and DeMarsh (1985) and

DeMarsh and Kumpfer (1986) found that improvements in parenting skills and family relationships reduced drug use among children of drug abusers in treatment. Kumpfer (1990) reports significant improvements in family relations and reductions in depression and problem behaviors in 6- to 12-year-old African-American children of drug-abusing mothers after 14 weeks of the Strengthening Families Program.

All of these parent education and skills-building strategies were brought from outside the family; that is, all involved initiatives carried out with parents whose children were seen as vulnerable to AOD disorders, whether by virtue of living in high-risk neighborhoods, or in association with early dysfunctional behavior, or because of the parents' own AOD use or other dysfunctional behaviors.

A little more than a decade after the Ypsilanti model appeared, another parent initiative was born that spread rapidly around the country. The aptly named parent movement was a product of parents' own activities and actively resisted the imposition of programs or values from outside experts, who at the time were seen as prodrug and antiparent. Parents organized themselves by community and, within their communities, supported each other's efforts to keep their children drug free, particularly from marijuana. Parents worked with school officials to set AOD policy, closed area head shops, sponsored antidrug demonstrations, and took collective action consistent with zero tolerance for AOD use in the home and community. Later, the influence of parent groups was felt nationally as well as locally and focus expanded to include alcohol use by youth. As a result, prevention of AOD problems moved to a more prominent position on the national agenda.

For parent groups, all children were viewed as at risk, regardless of neighborhood, family, or child characteristics. All parts of the community had to be joined to counter the threat of AOD use. Community organization on behalf of zero tolerance for AOD use by teenagers and support for each other's parenting efforts were the distinguishing features of the parent movement.

This broad-based interest of parents in preventing AOD use in children has produced promising results. By combining parent training activities with media exposure, it has been possible to expose large numbers of parents to parent training activities (Hawkins et al. 1989). Significant changes in attitudes and parent behavior occurred as a result of their parent training program. Combining the power of the parent movement with parent training and media coverage appears to hold promise for reducing adolescent drug use and for maintaining favorable community norms concerning AOD use.

School-Based Programs

Prevention programs designed to affect youth directly, rather than through parents or other mediators, have typically been organized through the schools (Bennett 1986). These programs emphasize health education, training in AOD refusal skills, and the development of adolescent life skills. These three components frequently exist in combination. Health education initiatives have come a long way from the scare messages that characterized drug education efforts of the 1960s and early 1970s. Current health education practices emphasize the following:

- Clarification that many youth do not use alcohol or other drugs. This is necessary because many adolescents overestimate the extent and popularity of AOD use by other adolescents.
- Exploration of adverse health consequences. Emphasis is placed on more immediate health risks that are considered significant to adolescents (e.g., an unpleasant tobacco odor attached to hair and clothes and unwanted loss of control associated with marijuana or alcohol use).
- Development of life skills associated with adolescent adjustment. Skills-building strategies may emphasize any or all of the problem-solving techniques—interpersonal skills, assertiveness, dealing with anxiety and stress, self-discipline, and so on. These efforts can be seen as building coping skills and thereby increasing confidence and self-esteem.
- Development of refusal skills to allow adolescents to reject offers of drugs by friends and acquaintances. In the development of refusal skills, adolescents can be given an opportunity to script for themselves and to practice refusal scenarios designed to allow them to remain AOD-free, using words and actions with which they feel comfortable. In addition, adolescents have an opportunity to explore the nature of tobacco and alcohol advertising in terms of that industry's intended effect on their behaviors.

Although seldom described in the literature (NIDA 1987), structured rap sessions offer significant potential to the task of AOD problem prevention. With structured rap sessions, health care counselors or trained peer counselors can guide groups of interested students in exploring significant adolescent issues. Students in middle and high school may elect to meet with a counselor or leader immediately after school or at free periods during the day. Although discussion topics are typically left to the students' own choosing, it seems likely that AOD use will emerge as a concern. The rap sessions offer an

opportunity for youngsters to examine their thinking and behavior regarding drug use and for the counselor to use the group to lend support to responsible behaviors.

School-based strategies have been subjected to extensive study and have shown considerable potential as primary prevention efforts (OSAP 1989). Pentz et al. (1989) have combined school-based programming with community organization and media efforts to achieve marked reductions in the initiation of AOD use among participating students compared with students not exposed to those initiatives.

On the basis of studies, NIDA (1985) and Washton et al. (1986) see school-based refusal skills training and training in adolescent life skills as offering great promise for AOD prevention. The vast majority of studies conducted have focused on preventing the initiation of tobacco use, with more recent emphasis placed on alcohol and marijuana (OSAP 1989).

Finally, it should be noted that various social agencies have become involved with outreach efforts to intercede with school-age youth who have dropped out, run away, or become homeless. These organizations attempt to link youth to the services and programs from which they may benefit (Doherty 1990).

Media Programming

While parent education and skills building emphasize increasing the capacities of parents to guide their children to AOD-free living, and school-based programming techniques emphasize increasing the capacities of youngsters to undertake AOD-free lives, media programs attempt to influence social norms concerning AOD use. Thus, media programming is frequently broadly focused, attempting to engage the attention and challenge the thinking of all preadolescents and adolescents as evidenced by the extensive drug use prevention media campaigns sponsored by OSAP and NIDA and advertising strategies promoted by the Partnership for a Drug-Free America. Media programming may be combined effectively with community organization strategies that build on concerns and ideas generated through media products (Flay and Sobel 1983; Hanneman et al. 1977, 1978).

The problem of the antidrug spokesperson's credibility has been a subject of research and discussion. It is widely believed that a spokesperson on drug use should be knowledgeable and should resemble the target population in race and socioeconomic profile, but knowledgeability and a good demographic match are not in themselves sufficient to ensure credibility; former drug abusers may be discounted by the viewer simply because of their failure to

avoid drug difficulties. The audience may reject the spokesperson as weak and unable to maintain control of the drug in question as well as they themselves can or will.

Media programming may have particular value in clarifying and supporting social norms in areas in which disagreement between groups leads to uncertainty. Abstinence messages directed to preadolescents and young adolescents often attempt to clarify for youth that if they reject drugs, they can nonetheless gain social approval and need not find themselves isolated in the community. It is possible that media programming can help to define societal goals of abstinence while parent- and adolescent-based strategies provide families and youth with the tools to reach those societal goals.

The appeal of using the media to transmit prevention messages is readily apparent. Through the media there is a capacity to capture and speak to a larger segment of the population than is available using any other technique. With some knowledge of the demographics of listening, viewing, or reading audiences, one can place prevention messages in appropriate broadcast time slots or print or other media. The drawbacks of media programming are equally apparent. Indepth information or guidance is at best difficult in a 30-second or 60-second time slot or on a single page of a magazine. The message is typically drawn to have meaning for a large audience, which may translate as having limited relevance to the life of any particular member of that audience. Nonetheless, media programming can have the effect of clarifying the community's values and interests concerning a particular issue and—for those with a stake in the benefits associated with social conformity—the media can provide an increased understanding of their own personal risk-benefit ratio.

There are inherent limitations to the efficacy of messages that emphasize the negative consequences of behaviors. Citing distant and uncertain consequences of drug use is of limited value in influencing behavior; immediate consequences must be of concern to the user and must be believed by him or her to be likely consequences (Flay 1985).

Youth at High Risk

Expertise has been developed around programming for youth whose early behaviors mark them at risk for AOD use or other behavior disorders. Emphasis has been placed on the identification of youth who evidence in-school behaviors that have been associated with later behavior problems (e.g., early evidence of antisocial acting out, truancy). These youth are taught strategies for impulse control, management of anger, coping with authority, and other important life skills. Parents typically are allied with youth in developing new behavioral skills for the family and supporting the develop-

ment of their children's skills. Less commonly, school personnel may also be involved and the school may be used as the setting for behavior change initiatives (OSAP 1989).

In addition, there is a need to ensure that communities offer opportunities for achievement and support for drug-free living. Community organizations and parent groups have been involved in developing recreational alternatives, school programs, and liaisons to the business and government communities (Hawkins et al. 1987). Mentoring programs that target at-risk high school students have been established, as well as business and government sponsorship programs for summer job opportunities. In addition, communities must be helped to support alternative education programs to encourage resumption of school work by youth who have dropped out of school. These are youth likely to be at risk for increasing drug use unless such programming is initiated (Annis and Watson 1975). Government—Federal, State, and local—becomes the resource that, in significant part, can guarantee or deny opportunities for achievement.

Although there is widespread agreement about government responsibility for maintaining a "level playing field" for all citizens, there is little agreement on which actions it should take. Government can take greater or lesser responsibility to remove obstacles to achievement (e.g., barriers of discrimination) and to provide pathways to achievement (e.g., educational and training supports to employment). Community values influence behavior. If opportunities for achievement are actively supported, they are more likely to be accepted by members of that community.

The Role of Policy in Prevention

Much of the work of prevention can be characterized as the codifying of behavior standards appropriate to the well-being of the individual and the larger society and the implementation of initiatives to help adolescents and young adults understand, accept, and conform to social norms. The violation of those standards threatens the loss of important societal privileges: family support, community standing, and achievement opportunities. It is understood, however, that for most youth some form of AOD use will be a temptation. There is an obligation to inform individuals about the dangers to them in terms of health, well-being, and lost or diminished opportunity if they violate rules and break laws. There is an obligation as well to make techniques available to help individuals understand and resist temptations. Society has the right—if not the obligation—to act equitably and rationally against those who break its laws. In this way, the law can be seen to act as both a deterrent and a corrective to drug-using behaviors.

In reality, this scenario of user accountability is rarely played out. Among other factors, the Nation remains ambivalent about drug use. It is common to condemn all those who form links in the distribution chain of drugs except those at the last link, the purchasers. From the prevention perspective the user is seen as a victim, as weak, as immature, as a risk taker, but rarely as a criminal. Even with drugs that are the most widely condemned, such as heroin and crack cocaine, the user is commonly seen as criminal only in association with antisocial acts other than drug taking (e.g., burglary). Undoubtedly, this perspective permits breaking users away from the criminal justice system and providing them with more effective treatment services than could be made available in systems that owe first allegiance to issues of legality. However, the unwillingness to prosecute users, admittedly exacerbated by crowded court calendars and large probation caseloads, sends a mixed message regarding society's attitude toward illicit drug use.

Concern about societal sanctions for the use of drugs and the unavailability of traditional criminal sanctions has led to a search for alternatives. With user accountability as the objective, a range of suggestions has been put forth embracing access—or the denial of access—to societal privileges: student loans, drivers' licenses, public housing. These suggestions have raised a significant public outcry.

On the one hand, the use of sanctions beyond those applied by family, neighborhood, school, and employer has been largely unknown. The application of sanctions to drug use behavior without widespread deliberation or preparation can be viewed as arbitrary and hurtful. In addition, individuals often meet the established and accepted criteria for obtaining those privileges by dint of their own efforts and circumstances. The loss of these privileges for reasons extraneous to their status of entitlement can be seen as action that is both arbitrary and inappropriate. Moreover, the denial of access to some services (e.g., public housing) jeopardizes the well-being of persons who are not themselves involved in illicit drug abuse, especially children of drug-using parents.

Workplace Programming

AOD abuse in the workplace has become a major national issue, for many believe national productive capacity is compromised by drug abuse. In response, many organizations have developed onsite prevention programs, expanded the role of employee assistance programs (EAPs), and sought increased insurance coverage for AOD disorders (Gust and Walsh 1989). There also has been a tightening of security in an effort to keep drugs out of the workplace. Efforts at the workplace—like overall government efforts—involve a mix of policing and support to achieve a drug-free community.

Prospective employees are frequently given urine tests as a part of their preemployment health screening examination and run the risk of being rejected if they test positive for recent drug use. Evidence of AOD use on the job is now more likely to be identified by supervisors newly sensitized to AOD abuse behaviors and is, in many organizations, grounds for referral to an EAP and monitoring of performance or termination.

Beyond these measures, efforts at the workplace may also involve drug education intended to be preventive. Through brown-bag lunch discussions, the dissemination of literature, and the availability of counseling for those concerned about themselves or their families, the workplace can be a significant setting for prevention programming. Moreover, if preventive counseling is extended to permit consideration of the worker's family as a major concern, the workplace can play a prevention role that takes its influence well beyond the workday. For example, parent training may be effectively introduced through workplace programs.

The concern about drug use at the workplace has stimulated more controversial prevention initiatives. Periodic random drug testing is being adopted at an increasing number of workplaces, even as it is being challenged in the courts (Gerstein and Grossman 1989). It is argued that periodic drug testing is effective in identifying and referring workers whose drug use has not yet caused a significant level of dysfunctional behavior. Drug testing acts as a preventive as well, discouraging workers from drug use that may be discovered by their employer and lead to their referral for counseling or other assistance, as well as to embarrassment, shame, and a threat to their jobs or careers. Thus, the costs of drug use are raised. The infrequent user must consider whether the pleasures are worth those costs; the regular user may have to choose treatment or dismissal.

Those who reject random drug testing cite its costs relative to the benefits realized, the likelihood that drug use will eventually affect behavior and come to the attention of supervisors that way, the risk of inaccurate reporting, and the cost to society of breaching any employee's privacy rights for whatever reason. The difference between the two positions is unlikely to yield to easy resolution and promises to be a source of protracted conflict.

Proposals to employ drug testing in the schools create an even greater controversy. Proponents want to identify those who may later experience significant difficulty associated with undetected drug use and to prevent experimentation by those who fear the stigma of detection. Opponents see drug testing in the schools as unnecessary and inappropriate, citing the same arguments that are used against drug testing at the workplace, with the added

danger that a student may drop out of school to avoid detection. As is the case at the workplace, the public concern with adolescent drug use is such that the debate over strategies to reduce drug taking is unlikely to be resolved in the near future.

The Physician's Role in Preventing AOD Problems

Members of the medical profession can play a major role in preventing AOD-related problems (Brown et al. 1989, Nurco and Balter 1990, Schwartz 1989). Practitioners of family medicine and pediatrics not only are seen as possessing a special knowledge but also are in a unique position to exert influence over the thinking and behavior of others. Their patients look to them for information about their health and physical functioning. Physicians' capacity to counsel regarding appropriate behaviors is profound. They must, of course, also possess the special skills needed to identify, confront, and counsel drug users.

Women appearing for prenatal care have obvious reason to be concerned about their health and are in a position to be counseled and observed regarding their physical functioning. It becomes the particular task of public health agencies to devise outreach strategies that will make that care available to low-income women in need.

In general, physicians have been slow to take on additional responsibilities associated with preventing AOD problems. Understandably, they are concerned about fitting an additional, and large, responsibility into already busy schedules. However, physicians have the capacity to clarify the dangers of crack cocaine and other drug use and to provide significant support to prevention efforts.

Preventing Crack Cocaine Use

The foregoing strategies and issues have been central to primary drug use prevention and early intervention efforts. In efforts to prevent crack cocaine use, general strategies can be adapted to meet the needs and functioning of older adolescents and young adults—the age groups most likely to become involved with crack cocaine and with cocaine generally (Adams et al. 1987, Kandel et al. 1985). These efforts must take account of issues of gender and ethnicity in identifying high-risk populations. Unlike strategies for prevention of most drug use, however, crack cocaine use prevention efforts cannot assume naivete about drug use in its target population. Much anticrack cocaine work, therefore, is necessarily secondary prevention with respect to illicit drug use.

With powdered cocaine, the typical drug user is considering a move up from alcohol and marijuana use. That move involves increased intensity of drug experience, increased—if uncertain—risk, and increased cost. With crack cocaine, increased expense is no longer a factor. One difficulty for prevention, therefore, is persuading current illicit drug consumers that crack cocaine is a product they do not want and cannot ultimately afford. To accomplish this, prevention programs may be designed that target AOD users and nonusers alike with prevention messages and activities developed to discourage use of crack cocaine. Alternatively, groups of AOD users may be specifically targeted to prevent their deepening involvement in drug abuse, that is, their initiation of crack cocaine use. The first strategy has the advantage of influencing a segment of the population that might otherwise become an at-risk group; the second strategy has the advantage of focusing often limited prevention resources on the population most at risk.

Much media programming regarding cocaine has emphasized potential costs to the user while at the same time offering a way for those already using to stop paying those costs by means of a help line linked to treatment services (NIDA 1985, Washton et al. 1986). The potential costs of cocaine use are explained as including financial ruination, destroyed health, and criminal prosecution. The theme is emphasized that the AOD users do not know—cannot know—what problems they may experience if they become involved with crack cocaine or powdered cocaine. The message is delivered by former users or by those with long-term involvement treating cocaine users, that is, by persons whose credibility should not be in doubt. The message is designed to arouse concern about contemplated or current behaviors without overdramatization.

In general, these messages appear to be well received by that part of the audience involved with cocaine, in either powdered or crack cocaine form. The messages have been associated with thousands of calls to help lines and have led large numbers of persons to seek help (Washton and Gold 1984). It is less clear how effective they have been in preventing initial crack cocaine or powdered cocaine use.

Anticrack cocaine media warnings must compete with other seemingly credible sources of information in the user's daily world. AOD users have friends who are drug users (Elliott et al. 1985), and some of those friends may claim to be expert on cocaine use by virtue of their own experience or that of others close to them. Thus, the AOD user is especially likely to be receiving competing messages from "credible" sources, both regular and continuing, and infrequent and unscheduled. Although there are data to suggest that cocaine users in treatment view friends as a less credible source of drug information

than they do television, radio, or magazines (Hickey et al. in press), it is unclear whether those users held the same views before becoming involved in treatment.

Crack cocaine warnings are also especially prone to sending target populations a double message: while warning of the damage to the crack cocaine user, the presentation may inadvertently enhance the drug's appeal. It is presented as being so pleasurable that a user will do anything to get it—forfeit fortune, family, even freedom. This phenomenon is reminiscent of the old antidrug slogan, "It's so good, don't even try it once!" Is it productive or safe to point out the attractiveness of a highly addictive new drug to a population that has already shown a willingness to use a wide range of drugs? Research is needed on this question.

The most effective roles of media programming about crack cocaine may be to buttress and clarify behavior standards, lend support to larger community organization efforts on behalf of prevention, and provide pathways out of crack cocaine abuse and addiction through community initiatives involving the drug abuse treatment community. As described above, there is evidence from the work of Hanneman et al. (1978) and Flay and Sobel (1983) that media programming joined to community organization can influence drug-using behavior. The reports of NIDA (1985) and Washton et al. (1986) show that interest in treatment services results from media support.

School-Based Crack Cocaine Use Prevention Programs

Although studies of school-based prevention strategies that have focused on a wider array of drugs generally have supported findings from work with tobacco alone (OSAP 1989), efforts have not been made to adapt these strategies to embrace powdered or crack cocaine and, in association with those efforts, to target youngsters in the later years of high school.

Three initiatives appear to have potential for crack cocaine use prevention. First, behavior change programs might be extended into the later high school years, focusing on adjustment issues specific to that age group including (among others) invitations to use crack cocaine or powdered cocaine. Life skills training could also focus on the increasing pressures and opportunities on older adolescents to engage in adult and independent behaviors—beginning work, separating from parents, making personal commitments, and so on. As an alternative, booster sessions could be employed to build on the refusal skills training and life skills training initiated at younger grades. Those sessions could focus more narrowly on the drugs and life problems that are more significant at later ages.

As a third possibility, refusal skills for crack cocaine could be incorporated into existing behavior skills training at the 7th- to 9th-grade levels. In view

of the publicity crack cocaine has been given, middle school students certainly will be aware of the drug and will likely view strategies to cope with it as relevant to their lives. Information about the dangers of crack cocaine could be introduced to shape attitudes against its use. Moreover, focusing attention on crack cocaine at the middle school or very early senior high school levels, may make it possible to capture and influence those youngsters who may otherwise drop out of school, many of them in association with drug use.

There is a clear need for study of various school-based strategies for preventing crack cocaine use. At this time, it is not known whether additional skills training programs for later high school years, booster sessions, structured rap sessions, or the incorporation of the topic of crack cocaine into existing skills training programs will reduce crack cocaine involvement.

The Role of the Community in Crack Cocaine Use Prevention

The threat of deprivation—of family support, community acceptance, or achievement opportunity—is the customary sanction used to encourage drug-free behaviors. With regard to the family, whether spouse or parents, there likely will be ample warning before crack cocaine use is initiated. The crack cocaine user will almost certainly have a history of significant alcohol or marijuana use or both before turning to cocaine. The family can support members in crisis to achieve change, but it must be prepared to make difficult choices as to what that support entails, what is in the best interest of the family member being helped, and what is in the best interest of preserving the integrity of the family and of individuals in the family. At the same time, government policy and programs must help maintain and strengthen the family to permit parents the greatest opportunity to prevent crack cocaine and other AOD use from affecting their children.

Where families have broken down or broken apart and children have become orphans of the street, programs are essential to halt the slide into crack cocaine use and a range of other dysfunctional behaviors. A 1981 study based only on contacts with shelters and crisis centers (Shaffer and Caton 1984) suggested that there were at least 165,000 runaways. Chelimsky (1982) reported 733,000 to 1,300,000 runaway and homeless youth nationally, based on estimates of street and institutional youth. As reported by Rotheram-Borus et al. (1989), a figure of 1.3 million runaway and institutional youth has been estimated by other investigators as well. Additional data (Farber 1987, Rotheram-Borus et al. 1989) have indicated that chronic runaways are significantly involved in AOD use and are likely candidates for crack cocaine use. For these children, family support is no longer an issue, barring significant program effort to reestablish family ties or to locate new sources of family support. Although that task is formidable, the inevitability of great social and

economic cost to those children and to the larger society makes programs of intervention essential, whether they involve family or other supports.

Another group of youth who are at particular risk for crack cocaine are those who have been placed in foster care. Nationally, 270,000 youngsters up to the age of 18 are in foster care. They come to foster care as multiproblem youngsters, having frequently been exposed earlier to neglect and physical or sexual abuse (Weinrott 1987). In followup studies (Fanshel and Shinn 1978), those emancipated from foster care were found to show significant levels of a variety of behavior disorders including (among others) AOD use. These studies were conducted in the days before crack cocaine; it is safe to assume that a comparable study now of young people emancipated from foster care, that is, people in their early twenties, would show significant levels of crack cocaine use. Society has paid little attention to the foster care population, content to find them a home in which an absence of physical or sexual abuse appeared assured and a willingness to care for children at low wages was displayed. Yet the vulnerability of this population to later difficulties, including AOD use, calls for innovative strategies of foster parent training and programming. Such programs are available (DeMarsh and Kumpfer 1985), combining behavior skills training methods with selective recruitment of foster parents and supervision of their performance. Evaluation has typically involved ratings of program satisfaction by foster children, supervisors, foster parents, and so on (Hawkins et al. 1985). Obviously, there is a need for outcome studies of these and other initiatives targeted to foster care.

The ability to use community acceptance as a reward is imperiled in communities that are in conflict over attitudes toward crack cocaine and other drugs. In areas where adolescents and preadolescents can earn significant incomes as crack cocaine runners and where crack cocaine dealers are entrepreneur heroes, community encouragement of drug-free living may be a tough sell. Community members, frequently at some risk, have organized neighborhood patrols and surveillance activities in association with local police to help rid themselves of violent crack cocaine distributors. Such actions not only help prevent drug distribution but also clarify community standards and reaffirm community role models. There is an obvious need for sufficient support from law enforcement to allow community members to take possession of their streets and neighborhoods. There is a need, too, for penalties to be real for those found responsible by the courts for making drugs available in the community.

Community organization of the public and private sector is significant to two objectives associated with crack cocaine and other drug abuse prevention: it can be employed to (1) limit the availability of crack cocaine or other drugs

in a community and (2) increase opportunity for prosocial accomplishment, including opportunity for those whose earlier behaviors placed them at significant risk for crack cocaine.

One essential strategy for preventing crack cocaine use is the identification of young people already involved in AOD use for referral to programs that permit the exploration of drug-free alternatives. These programs cross the line from prevention to treatment in their efforts to interrupt adolescents' drug-using patterns.

Runaways are often involved with drugs and exhibiting increasingly dysfunctional behaviors, and foster children are at significant risk for AOD use and, by virtue of age of emancipation, for crack cocaine. Runaways and foster care children are identifiable within the community, although the development of innovative—and effective—programming largely awaits further research and invention. Programming for such youth seems easy to justify.

Two other groups also warrant referral for AOD interventions. Both are adolescent populations likely to have histories of AOD use other than crack cocaine, although both may have histories of crack cocaine use as well. Youth referred to Job Corps programs are reported to have histories of significant and largely untreated AOD use and are at an age when continuing use is likely to lead some to use crack cocaine. Because the youth are in residential settings and are involved in initiatives designed to produce new and prosocial opportunities, it is reasonable to expect that a significant number of Job Corps residents could be engaged to explore their drug use and seek ways to control it. Mutual support initiatives could be combined with relapse prevention techniques (Catalano et al. in press, Hawkins et al. 1985, Marlatt and Gordon 1985, McAuliffe and Ch'ien, 1986) to effect and support behavior change. For some residents, formalized programs are an appropriate resource to lend support to adolescents' efforts to become and remain drug free. For all who have been involved in AOD use, support from programs such as Alcoholics Anonymous or Narcotics Anonymous can be useful aids to remaining drug free in the face of cues and temptations when the adolescents return to their own communities (DuPont 1989).

Similarly, adjudicated youngsters are overwhelmingly likely to have been involved in some type of AOD use (NIJ 1990, Hawkins et al. 1987). A variety of approaches have been effective in reducing further dysfunctional behavior in delinquent youth, including strategies using contingency management, cognitive behavioral skills training, and life skills training (Catalano et al. 1989, Haggerty et al. 1989, Platt and Hermalin 1989, Platt et al. 1987). Although most of these efforts did not target drug abuse as a particular issue, it can be reasoned that initiatives targeting one set of antisocial behaviors will affect related behaviors. Approaches using innovative strategies to engage and

treat dysfunctional youth and their families have directly targeted drug users and led to significant increases in the number of adolescents involved in treatment and a diminution in their drug-taking behaviors (Szapocznik et al. 1988, 1989).

Drug-using delinquent youth typically experience multiple difficulties in the areas of emotional and psychological functioning, vocational skills, and educational involvement and performance, minimizing their stake in conventional values and behaviors. Successful intervention efforts with these youth, who are likely to become involved with serious drugs such as crack cocaine, must be holistic, intensive, and often long term.

Programs to help these youth are sadly inadequate. For youth who are deeply alienated from conventional society, a creative blend of penalties and opportunities is necessary to sustain the difficult process of movement from delinquency to a socially responsible lifestyle.

In institutional settings, support coupled with relapse prevention strategies can be useful. Modified therapeutic communities, such as the Stay 'n Out program (Wexler et al. 1988), have reported success using these strategies to reduce recidivism.

For other youth, referral through the Treatment Alternatives to Street Crime (TASC) program may be warranted to reduce existing levels of AOD use and prevent initiation of crack cocaine and other drug use. Through TASC, criminal justice processing is interrupted for drug-involved offenders who appear able to benefit from community AOD treatment services. In return, the court or other referring authority is kept apprised of the client's progress. A system combining support and sanctions is available to help induce behavior change. For the individual who succeeds, all further criminal processing can be halted; protracted failure leads to a return to the criminal justice system. Although the effectiveness of TASC in working with drug-using adult offenders has been established (Collins and Allison 1983), there were limited juvenile TASC programs in the country as recently as 1989 (BJA 1989).

CHAPTER 4

Research Agenda for Crack Cocaine Use Prevention

A host of issues significant to crack cocaine use prevention await study. This section suggests several lines of investigation within the general categories of etiology, epidemiology, and program evaluation.

Etiologic and Epidemiologic Studies

Epidemiologic studies by Kandel et al. (1985) and Adams and Gfroerer (1988) have described AOD users who progress from alcohol or marijuana or both to cocaine as differing from AOD users who do not in terms of (1) earlier histories of AOD use, (2) friends and sexual partners supportive of drug use, (3) absence of a traditional marital relationship, and (4) absence of a stable residence and job. In short, these individuals have fewer ties to the larger, prosocial community. Consistent with those findings, Dembo et al. (1990) and Inciardi and Pottieger (1990) have characterized the AOD user who becomes involved with crack cocaine as also more likely to become involved in drug sales and other criminal acts. Other investigators (Dougherty and Lesswing 1989, Weiss et al. 1986, Yates et al. 1989) report cocaine use to be associated with underlying psychopathology, although they disagree about the nature of that disturbance, some emphasizing affective disorder and some emphasizing antisocial personality disorder.

Dramatic differences between ethnic groups in the initiation and maintenance of crack cocaine use have been reported in some studies. African Americans and Hispanics are more than twice as likely to initiate crack cocaine use as are their White counterparts (NIDA 1989a). Longitudinal study of adolescents drawn from different ethnic groups can explore the relevance of such factors as socioeconomic status, optimism or pessimism about one's future, family and peer relations, characteristics of users' communities, psychological functioning, and demographic characteristics of the initiation of crack cocaine use and of AOD generally.

Longitudinal study can also assess consequences of crack cocaine use, including frequency and patterns of use; use of other drugs; health consequences; involvement in criminal activities; changes in social networks; impact on family; use of treatment, health care, and social service systems; and so on.

The need for longitudinal study to explore initiation of crack cocaine and the consequences of drug use is important to an understanding of gender as well as ethnic differences. Frequent users of crack cocaine are about equally as likely to be female as male, versus the patterns for most other drugs of abuse (NIDA 1989b). Reasons for that equality of opportunity are not clear and may reflect changes in male and female roles in the larger culture. Clarification of issues in the initiation and maintenance of crack cocaine use by gender and by ethnicity is needed to develop targeted prevention programs.

Although longitudinal studies are desirable, there is also a need to conduct short-range cross-sectional studies. Cross-sectional studies can provide information comparatively quickly to meet crises that do not lend themselves easily to long-term study. Drug-taking behaviors change so rapidly that drug use patterns and factors associated with drug use may differ over the life of a longitudinal study, reducing the relevance of those studies' findings for contemporary populations. Thus, explanations of the initiation of drug-taking behaviors based on longitudinal studies of samples of persons who are now young adults may have little meaning for the lives and functioning of current adolescent populations.

Exploration can be undertaken of same-age groups differing in use of crack cocaine; for example, one group involved in regular crack cocaine use, a second group involved in regular use of gateway drugs other than crack cocaine, and a third group not involved in gateway drugs or crack cocaine. Such a study could stratify samples by ethnicity and gender. Exploration could then be made of the several variables outlined above to clarify differences, if any, that could be significant to prevention programming.

Although such a study has the obvious advantage of speed, it has drawbacks not found in longitudinal investigations. Specifically, it is necessary to rely on retrospective reporting to obtain an understanding of respondents' functioning and activities before crack cocaine or other drug use. Respondent reporting is unquestionably suspect, because of both inaccuracy of memory and deliberate untruthfulness.

The limitations of cross-sectional study are particularly apparent with regard to efforts to understand the role of psychological functioning in the initiation and maintenance of crack cocaine and other drug use. After the fact, discriminating between psychological functioning before drug use and after drug use becomes impossible.

Cross-sectional study makes use of a key informants strategy, relying on those who knew the respondent before his or her initiation of the drug or drugs in question to report on selected aspects of the respondent's functioning at that time. Again, many of these informants are also likely to be subject to the inexactness of memory and the concern for social desirability suggested above

for study subjects. Alternatively, some understanding of baseline differences in groups' psychological functioning might be approached through assessment of the current and past psychosocial functioning of first-order relatives, examining both psychological and AOD use characteristics of those subjects.

Ethnography is yet another promising avenue of research for clarifying issues surrounding crack cocaine use, although typically it has been greeted with even less enthusiasm than cross-sectional study. Ethnographic study presents an opportunity to assess issues in the initiation and maintenance of crack cocaine use in a social context unavailable through any other mode of study. Through ethnography and its use of nonparticipant observation and unstructured interview, study can be made of the social networks of crack cocaine users, their use of formal and informal support systems in the community, the underground economic system that underlies the distribution system for crack cocaine, and so on. Perhaps most significant, ethnographic study can be used to observe and describe the characteristics and functioning of those crack cocaine users who do not come to the attention of public service delivery systems.

Subjects for drug abuse studies are almost wholly drawn from samples of persons entering treatment systems, correctional programs, or other points of contact with the public service sector. Yet the few studies that have been conducted examining individuals who do not come into contact with those systems suggest that there are, indeed, important differences between drug users in the community and drug users involved with community-based services (Hanson et al. 1985, Rounsaville et al. 1982).

In addition to clarifying pathways into drug use, ethnographic studies can also help to clarify pathways out of drug use for individuals who do not make use of formal treatment systems or for whom formal treatment systems have apparently failed (Waldorf and Biernacki 1981). In addition, ethnographic studies can be used to point the way for the development of closed-ended interview schedules and questionnaires in areas in which response categories were lacking before the ethnographers made their observations or used their unstructured interviews.

Surveys of selected at-risk populations can also be taken. Much has been made of the difficulties in creating drug abuse policy and programs exclusively on the basis of surveys of comparatively stable and successful populations. Although high school and general population studies are crucial to monitoring trends in drug abuse across a significant part of the population, these surveys can benefit from being augmented by studies of selected populations believed to be at risk for, or involved in, AOD use. Efforts have already been initiated to examine drug-using behaviors and functioning of school dropouts and of adolescents seen in the juvenile criminal justice system (Hawkins et al. 1987).

In addition to those groups, there is need to clarify drug use behaviors and the psychosocial functioning of runaways and of emancipated foster care youth.

This is not to suggest that interventions on behalf of any or all of these groups should await the results of further study. It is already known that these are groups are at significant risk for behavioral and psychological problems. Further study can help to clarify issues that are significant to prevention programming specific to the needs of these different populations, allowing for the refinement of prevention strategies.

An additional population that warrants study is that of children of AOD abusers. Much has been made of the risk of AOD use by children of alcoholics. There is a need for surveys of the offspring of regular and frequent users of drugs other than alcohol to determine the extent of drug use and other dysfunctional behaviors in those populations relative to demographically comparable peers. Again, such studies are significant to an understanding of issues in structuring prevention programs—in these instances conducting prevention efforts in conjunction with the delivery of treatment services to parents recovering from AOD abuse. Here, too, there is little reason to postpone the use of parenting or family programs for individuals in drug abuse treatment, given reports of their effectiveness (DeMarsh and Kumpfer 1986, Hawkins et al. 1987, Kumpfer 1990). There is a need to clarify further the lines along which those programs might most effectively be structured.

Two additional issues from epidemiologic study have become significant public concerns and warrant further attention from the research community. The first issue is that of drug-exposed babies. There have been extensive reports in the media of increasing numbers of babies born to mothers addicted to crack cocaine, babies who are abandoned at the hospital and are themselves addicted to cocaine (*New York Times* 1988). There is a need to determine the number of babies affected, the disposition of their situations, and, most important, the developmental difficulties to which they will be subject together with the steps needed to be taken to alleviate or remedy those difficulties. Of equal importance, this phenomenon points to the need to develop and test strategies for reaching cocaine users early in their pregnancies and to devise and test prevention initiatives appropriate to the needs and concerns of those young women.

The second issue, which also primarily affects women and threatens to overshadow even the concerns about crack cocaine-exposed babies, is the relationship between crack cocaine and acquired immunodeficiency syndrome (AIDS). Research has found that frequent crack cocaine users have a greater likelihood of contracting sexually transmitted disease (STD) (Fullilove et al. 1990), and a relationship between crack cocaine use and human immunodeficiency virus (HIV) seropositivity has been reported as well

(Hoegsberg et al. 1989). Crack cocaine's highly addictive properties, as well as the drug's capacity to act as a disinhibiting agent, appear to be responsible for the relationship of crack cocaine to HIV and STD infection. Those properties are also associated with the exchange of crack cocaine for sex, a phenomenon reported in the professional literature (Fullilove and Fullilove 1989, Goldsmith, 1988) and in the media. These findings suggest to some a need for AIDS-related education and also for the ready availability of condoms for protection among drug abusers (Fullilove et al. 1990). The findings dramatize still further the need for prevention programming regarding crack cocaine and other drugs that takes account of gender differences and tailors programs accordingly.

Evaluation Research

The evaluation of prevention programs regarding crack cocaine and other drug use must go forward in the dynamic environment that characterizes the fields of prevention and treatment. With evaluation research, the degree of rigor with which studies can be conducted varies with field conditions. The ideal is to achieve a comparison among groups equated for all variables relevant to the initiation of crack cocaine or other drug use, with the exception of exposure to the prevention programs. Because controlled research is difficult, funding agencies also must be willing and able to design rigorous studies within the bounds of field investigation and capable of lending guidance to prevention efforts.

The study of media programming is a particular case in point. Although controlled studies involving differential exposure to media products have been conducted (Hanneman et al. 1977, 1978), media programming is often intended to affect the entire population, making the use of control or comparison groups difficult. Indeed, even when apparently comparable communities are compared for exposure and nonexposure to media products, questions can be raised regarding the comparability of these groups in factors significant to the study, e.g., prior exposure to prevention messages or attitudes and actions of public officials toward drug use and users. Nonetheless, studies conducted in association with media products, even those of a comparatively simple pre-post design, can provide useful but limited information regarding the extent to which particular media packages affect different age, sex, ethnic, and socioeconomic groups in the population, as well as the extent to which the intended audience reports changes in knowledge, attitudes, or behaviors subsequent to specific programming.

Other preventive interventions lend themselves to more rigorous study, partly because they focus on narrower portions of the population. Study of preventive interventions may make use of matching techniques, for example,

matching schools or classrooms in the same school. Again, however, schools and classrooms are exposed to different administrative structures and styles and different group dynamics that may affect program impact. In our judgment, these studies provide important information and argue further for developing the most rigorous design possible and interpreting study findings with caution.

By (1) matching schools for student demographic characteristics, availability of school services, and (if feasible) administrative styles and (2) randomly assigning schools or classrooms within schools, evaluative study can be made of the following methods: the use of refusal training and life skills training with problems adapted to older grades (i.e., senior high school); booster sessions employed in conjunction with training in refusal and life skills initiated at the middle school level; and the incorporation of crack cocaine use prevention as a part of middle school prevention programming. Similar strategies can be employed to assess the efficacy of structured rap sessions or of programs developed for college students.

Comparatively rigorous study can be designed to assess the efficacy of innovative strategies to reach and modify the behaviors of runaways, of youngsters entering the criminal justice system, and of youngsters assigned to foster care placement. These studies may employ random assignment of individuals to innovative and *usual* service delivery systems, obtaining baseline measures at entry into those systems and conducting followup of individuals at a point or at points during and after intervention to determine differences between groups in their functioning or in the extent of behavior change.

The more narrowly structured the intervention, the more likely it is to lend itself to greater controls and thereby to greater credibility within the research community. However, few would argue that the more comprehensive the system of intervention (e.g., organizing efforts in a community to bring together a range of individuals and institutions significant to crack cocaine prevention), the more likely it is that the prevention program will have an impact. If research is to be viewed as a tool of policy and program development rather than as an end in itself, it is the obligation of research staff to adopt the most rigorous research design to assess promising prevention strategies.

Information Exchange

The effort to understand the efficacy of preventive intervention points to a frequently omitted task of research: the transmission of research findings in a language and format that allows information to affect policy and the delivery of prevention services. Too often researchers and service providers speak in

different tongues and find little reason to communicate with one another. Technology transfer typically receives more rhetorical than real support. The reasons are simple: Researchers receive tangible rewards of grants, tenure, and promotion for reporting their findings in journals that are deemed prestigious by their university peers but have limited audiences outside academia. They have little extrinsic incentive to communicate those same findings to service providers in the community. Indeed, even where the will exists, the means to achieve exchange are rarely accessible. At the same time, service providers have little interest in or access to research articles, which typically dwell at far greater length on methodology and analysis than on a description of the intervention or issues in program implementation.

At a time when information technologies are improving rapidly, allied professionals tend to restrict themselves to the use of the print medium, a medium maintained mainly by and for the research community. Far wider use could be made of how-to manuals to help implement effective preventive programs. Beyond manuals, workshops can be organized to help implement innovative programs. Other initiatives could include creating videotaped instruction, making greater use of computer bulletin boards, and investigating the use of interactive computer programming to bring new findings and new models of prevention to those who can implement them effectively. The task of preventing crack cocaine and other drug use demands a greater use of information exchange technologies now available. With government taking responsibility for making research findings accessible in terms of language and format, the various strategies of information exchange can and should be used to bring the contributions of research to the policymaking, program-planning, and service-providing publics.

Summary and Conclusions

Preventing the use of crack cocaine presents a formidable challenge. The highly addictive nature of the drug and the profile of the most likely users contribute to the unique nature of the problem. The campaign to prevent future use of crack cocaine must be waged on several fronts. First, educational efforts targeting youth at high risk of becoming users should be continued and expanded to incorporate new information about the characteristics of both the drug and the high-risk populations. The attraction of crack cocaine for women, especially those of childbearing age, must be a major focus of prevention efforts, for the sake of both the women themselves and the generations to come. To accomplish these tasks, the battle must be joined on several fronts. Prevention programs must include parents, health care providers, schools (from elementary through college level), the media, the workplace, and the community. Beyond the commitment and involvement of these individuals and social institutions, there must be continued research to assess the efficacy of prevention efforts and to communicate the process and the outcomes of successful prevention techniques.

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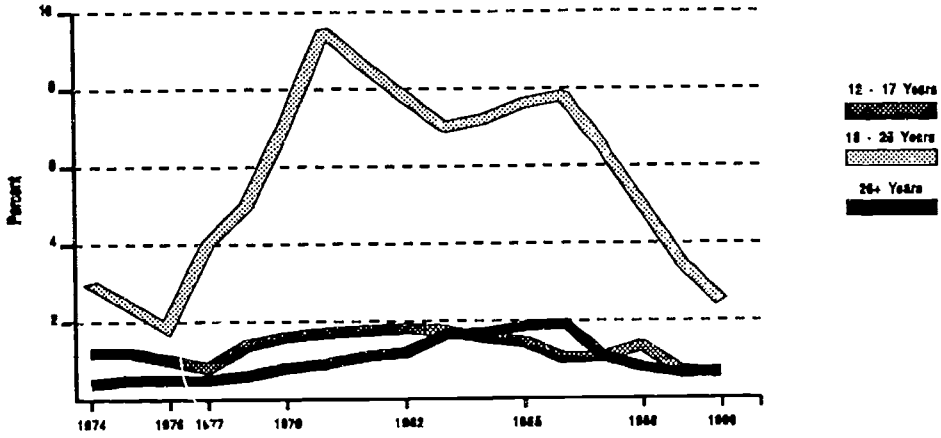
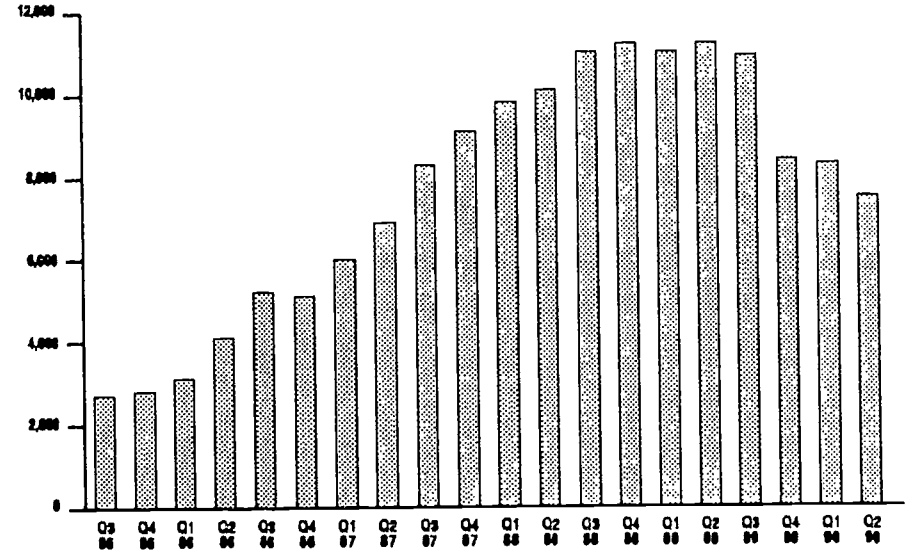
Figures and Tables



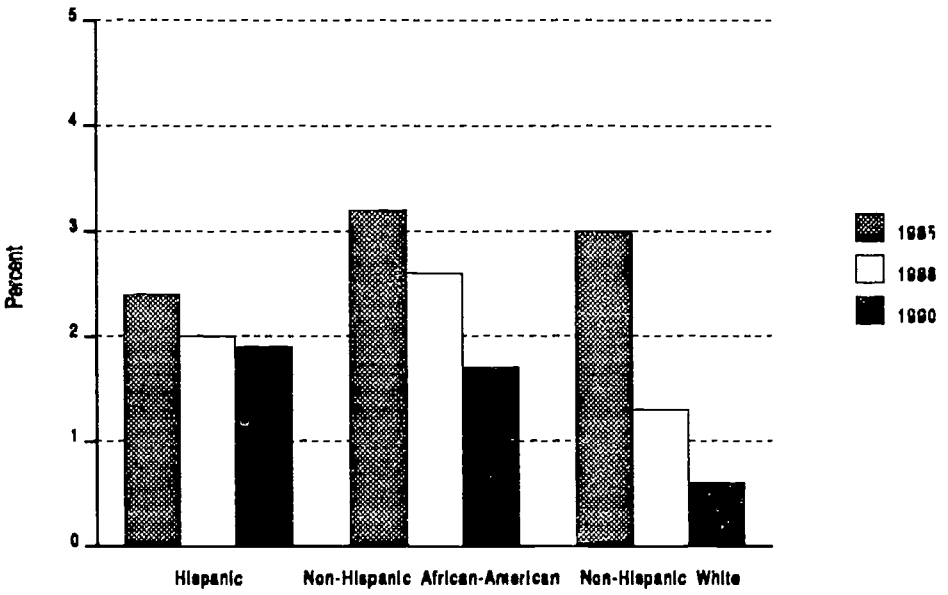
In 1974, 1976, and 1977 the estimates were less than 0.5 percent for the 26+ years age group.

Figure 1. Cocaine: Trends in Past-month Use by Age Group



Source: NIDA, Drug Abuse Warning Network (DAWN) files as of September 1990.

Figure 2. Trends in Emergency Room Episodes Involving Cocaine in Consistently Reporting Facilities: DAWN, 3rd Quarter 1985 to 2nd Quarter 1990



Source: National Household Survey on Drug Abuse

Figure 3. Cocaine: Trends in Past-month Use by Race and Ethnicity, 1985, 1988, and 1990

Table 1. Percentage estimates of use of any drug: Ever, within the past year, and within the past month by age, race, and sex

	Ever		
	Whites	African Americans	Hispanics
Age			
12–17	24.0	20.6	21.1
18–25	59.3	47.6	47.3
26–34	67.6	55.7	46.0
35+	26.0	28.9	22.8
Sex			
Male	42.2	46.9	40.5
Female	34.3	27.2	24.8

	Past Year		
	Whites	African Americans	Hispanics
Age			
12–17	16.9	12.7	17.0
18–25	30.2	24.4	27.3
26–34	22.4	24.0	20.1
35+	5.7	8.3	5.5
Sex			
Male	14.8	18.5	10.0
Female	11.6	11.9	10.6

	Past Month		
	Whites	African Americans	Hispanics
Age			
12–17	8.9	6.7	6.5
18–25	16.0	13.7	11.4
26–34	9.6	13.7	9.4
35+	2.5	5.1	3.0
Sex			
Male	7.5	11.1	8.8
Female	6.0	6.6	4.6

Source: National Household Survey on Drug Abuse: Population Estimates 1990.

Table 2. Percentage estimates of use of crack cocaine: Ever, within the past year, and within the past month, by age, race, and sex

	Whites	African Americans	Hispanics
Ever			
Age			
12–17	0.9	—	1.0
18–25	2.8	3.6	2.4
26–34	2.5	7.6	2.8
35+	0.4	1.5	—
Sex			
Male	1.6	4.7	2.4
Female	0.7	1.8	0.8
Past Year			
Age			
12–17	0.7	—	—
18–25	1.3	2.5	—
26–34	0.6	4.3	—
35+	—	—	—
Sex			
Male	0.5	2.6	—
Female	0.2	1.0	—
Past Month			
Age			
12–17	—	—	—
18–25	0.5	2.0	—
26–34	—	2.3	—
35+	—	—	—
Sex			
Male	0.3	1.1	—
Female	—	0.8	—

Source: National Household Survey on Drug Abuse: Population Extimates 1990.

Dash = insufficient data to esti.nate use.

Table 3. Percentage estimates of use of cocaine: Ever and within the past year, by age, race, and sex

	Ever		
	Whites	African Americans	Hispanics
Age			
12–17	2.7	2.0	3.2
18–25	21.0	12.3	18.7
26–34	27.7	20.3	20.4
35+	5.9	7.1	6.1
Sex			
Male	14.0	13.0	16.3
Female	9.6	7.5	8.3

	Past Year		
	Whites	African Americans	Hispanics
Age			
12–17	2.3	1.7	3.1
18–25	7.2	7.3	9.7
26–34	6.4	9.7	8.6
35+	0.8	1.0	2.0
Sex			
Male	3.9	6.0	7.3
Female	1.9	2.3	3.0

	Past Month		
	Whites	African Americans	Hispanics
Age			
12–17	0.4	—	—
18–25	1.9	3.6	3.1
26–34	1.3	4.2	2.6
35+	—	—	—
Sex			
Male	0.8	2.5	2.7
Female	0.4	1.1	1.0

Source: National Household Survey on Drug Abuse: Population Estimates 1990.

Dash = insufficient data to estimate use.

Table 4. Percentage estimates of use of marijuana: Ever, within the past year, and within the past month, by age, race, and sex

	Ever		
	Whites	African Americans	Hispanics
Age			
12–17	16.7	12.8	14.4
18–25	55.8	43.1	43.4
26–34	65.9	51.1	44.0
35+	22.0	24.9	20.5
Sex			
Male	38.6	41.4	38.9
Female	30.1	23.7	22.4

	Past Year		
	Whites	African Americans	Hispanics
Age			
12–17	12.0	9.4	12.6
18–25	26.7	18.2	20.7
26–34	18.5	20.1	15.4
35+	3.4	5.5	3.5
Sex			
Male	11.9	13.8	14.1
Female	8.5	9.0	7.7

	Past Month		
	Whites	African Americans	Hispanics
Age			
12–17	5.9	3.4	4.3
18–25	13.8	12.6	8.2
26–34	8.3	13.5	7.2
35+	1.8	2.7	1.9
Sex			
Male	6.2	8.7	6.6
Female	3.9	5.1	2.8

Source: National Household Survey on Drug Abuse: Population Estimates 1990.

Table 5. Violence and ... symptoms associated with ...aine use

(percent of each group with violent ... ...tics or psychotic symptoms)

Symptom	Crack (N=28)	Freebase (N=19)	Intravenous (N=14)	Intranasal (N=19)
Suicidal thoughts	57	26	43	37
Threats to others	36	5	7	21
Injury to others	19	5	7	5
Thought disorders	25	16	0	5
Paranoia	50	37	14	26
Depression	43	53	64	32
Auditory hallucinations	36	21	14	32
Irritability	11	21	14	11
Average violence score	1.46	0.53	0.79	0.95
Average psychosis score	1.25	0.89	0.36	0.79

Source: Crack smokers more violent, psychotic than other cocaine users. *NIDA NOTES*, Winter 1989a.

Primary Source: Honer, W.; Gerwitz, G.; Turey, M. Psychosis and violence in cocaine smokers. *Lancet* II (8556): 451, 1987.

APPENDIX A

The Committee and Its Mission

The committee for "Crack Cocaine: A Challenge for Prevention" was selected from a broad range of authorities on drug abuse from throughout the Nation. Represented on the committee were experts in epidemiology, prevention, treatment, applied research, ethnic issues, child and maternal health, criminal justice, and media studies. Private, educational, State, and Federal agencies were all represented.

The committee was initially convened in Rockville, MD, on April 3, 1990. A review of the literature and of the epidemiology of crack cocaine provided core information for the meeting, which was characterized by a stimulating and wide-ranging exchange of knowledge. It quickly became evident that this was an historic gathering, with drug abuse experts convened for the first time to specifically address the challenges of crack cocaine use.

Based on the proceedings, an initial draft of this report was written by the staff of the Institute for Behavior and Health, Inc., and circulated to the committee members for suggestions and modifications. A revised manuscript was prepared and resubmitted to the committee.

Funding for the meeting and the report was provided by a grant from the Pew Charitable Trusts.

The Office for Substance Abuse Prevention (OSAP) provided manuscript editing and print production, Government printing, and international distribution of this AOD prevention monograph.

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