Frequent Cocaine Users and Their Use of Treatment

ABSTRACT

Objectives. Despite decreases in the number of cocaine users since 1985, the consequences of cocaine use continue to rise. This paper provides descriptive data on frequent cocaine users that will help to explain these diverging trends and enable treatment planners to better predict the types of cocaine users who are likely to seek treatment.

Methods. Data from the National Household Survey on Drug Abuse were used to study the characteristics of frequent cocaine users since 1985. The 1991 data were used to compare frequent users with infrequent users and nonusers.

Results. Since 1985, frequent cocaine users have become older. In 1991, they were likely to be unemployed (32.4%), unmarried (82.3%), and without health insurance (39.4%). Most were cigarette smokers (86.8%) and marijuana users (88.4%), and 32.0% reported getting drunk weekly. Criminal behavior was more likely among frequent cocaine users than among infrequent users and nonusers. Almost a third (30.0%) reported drug abuse treatment experience in the past year.

Conclusions. Despite the recent decreases in overall prevalence of cocaine use, the need for treatment of cocaine abusers will continue. Treatment must address multiple problems that occur in conjunction with cocaine abuse. (*Am J Public Health.* 1993;83:1149–1154) Joseph C. Gfroerer, BA, and Marc D. Brodsky, MS

Introduction

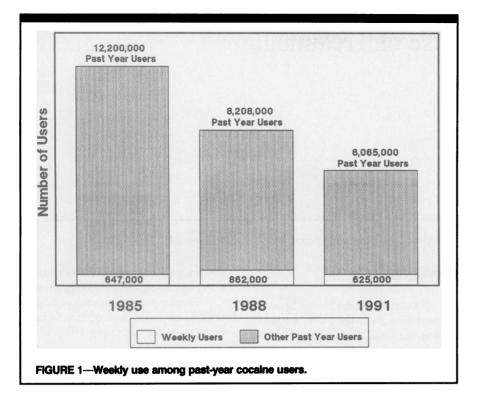
Cocaine use in the United States increased throughout the 1970s, reached a peak in the mid-1980s, and has been decreasing since then.1-3 However, despite the declines in the overall number of cocaine users since 1985, the indicators of the consequences associated with cocaine abuse have continued to show increases. Cocaine-related emergency room visits and cocaine-related deaths reported to the Drug Abuse Warning Network of the National Institute on Drug Abuse increased dramatically from 1985 to 1989.3-5 The proportion of cocaine admissions to treatment in state-supported treatment programs also increased from 1985 through 1990.6 These increases in consequences during a period when the estimated number of cocaine users was decreasing might be explained by several factors, including the widespread use of the cheaper, more dangerous smokable crack cocaine beginning in the mid-1980s. Another explanation is that while the number of experimental or occasional cocaine users has decreased, there has been no decrease in the number of heavy or frequent users who are more likely to suffer adverse consequences from their use. Increasing consequences could be related to the longterm effects of continued use by a cohort of heavy users who are aging and becoming more susceptible to health risks from their use of cocaine. Other possible factors affecting trends in consequences include increasing use of cocaine by injection or in combination with other drugs and changes in access to care due to changes in health insurance coverage of the cocaine-using population or shifts in treatment capacity. Improved reporting of consequences by health care professionals and increasing reluctance among survey respondents to report their drug use may partially explain the diverging trends.

The size of the population of frequent cocaine users has been difficult to determine; various studies since 1985 have estimated its size to be anywhere from under 700 000 to over 2 million.7-12 However, little work has focused on describing the characteristics of heavy cocaine users, which may be more important for prevention and treatment planning purposes. This is due, in part, to the lack of available data. The small sample size and possible undercoverage of frequent cocaine users in the National Household Survey on Drug Abuse has led to the reliance on nonrepresentative samples from treatment populations and from cocaine-related emergency room episodes to describe the population of heavy cocaine users.12-14 However, an expansion of the sample in 1991 provides the opportunity to describe this population with a greater degree of accuracy than was previously possible. The purpose of this paper is to provide a description of frequent cocaine users, using primarily the 1991 National Household Survey data but also examining trends since 1985, the peak year for cocaine prevalence. Data on treatment use (in emergency rooms and other locations) by frequent cocaine users will also be analyzed and discussed. These data may help to

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This paper was accepted January 25, 1993.



explain the diverging trends seen in the consequences data, provide insight into the relationship between the various drug abuse indicators, and enable treatment planners to better predict which types of users are more likely to seek treatment in the future.

Methods

Description of the National Household Survey

The National Household Survey on Drug Abuse is conducted by the Substance Abuse and Mental Health Services Administration to provide estimates of the prevalence, consequences, and patterns of drug use and abuse in the United States. Prior to October 1, 1992, when the Substance Abuse and Mental Health Services Administration was created, the National Household Survey was sponsored by the National Institute on Drug Abuse. The survey uses a nationally representative sample and is the primary source of data on the prevalence of illicit drug use in the United States.

The National Household Survey has been conducted periodically since 1971. Fewer than 10 000 respondents were included in each survey until 1991, when oversampling in six large metropolitan areas and an expansion of the national sample increased the sample size to 32 594 respondents. The respondent universe for the 1991 National Household Survey was the US civilian noninstitutionalized population 12 years of age and older. Residents of noninstitutional group quarters (e.g., shelters, rooming houses, dormitories) and residents of civilian housing on military bases were included. Persons excluded from the universe include those with no fixed address, residents of institutional quarters (e.g., jails and hospitals), and active military personnel.

The household interviews take about an hour to complete and incorporate procedures designed to maximize honest reporting of illicit drug use. Data are collected on the recency and frequency of use of various licit and illicit drugs, demographic characteristics, problems associated with drug use, criminal behavior, and drug abuse treatment experience. Selfadministered answer sheets are used by respondents for drug use and other sensitive questions, so that responses are not revealed to interviewers. After they are completed, the answer sheets are placed in an envelope that is sealed at the end of the interview and immediately mailed with no name or address information included.

The methodology used seems to be effective in terms of eliciting valid data from respondents (relative to other methodologies), based on research that evaluated the use of interviewer-administered drug use questions both in person and by telephone.^{15,16} The 1991 household screening response rate was 96.5% and the interview rate was 84.2%, for a total response rate of 81.3%.

Data Analysis

For this paper, frequent use is defined to be use on a weekly basis or more often during the year prior to interview. We excluded past-year cocaine users who did not report their frequency of use.¹⁷ Imputed estimates that incorporate adjustments for item nonresponse are shown in Figure 1.

Changes over time in the characteristics of frequent cocaine users were studied by comparing the demographic characteristics and drug use patterns of these users from the National Household Surveys conducted from 1985 to 1991. The 1991 data were used to compare frequent cocaine users with infrequent users (pastyear users who used less than weekly) and nonusers (persons who did not use cocaine in the past year). Nonusers were restricted to persons aged 12-59, since cocaine use is rare in older populations. It should be pointed out that infrequent users include those who had used as little as one time in the past year, as well as those who has used up to several times a month, and that nonusers include some people who has used cocaine in their lifetime (over a year before the interview). Comparisons were made with z tests that accounted for correlations between estimates due to the complex sample design. All estimates are based on analysis weights that account for differential rates of sampling and adjust for nonresponse due to nonparticipation in the survey.

Results

Trends in Weekly Cocaine Use

Figure 1 shows the trends since 1985 in past-year and weekly cocaine users. The number of past-year users has declined from 12.2 million to 6.1 million during this period, but the number of weekly users has shown no statistically significant change. Using the data in Figure 1, the percentages of past-year users who were weekly users were estimated to be 5.3% in 1985, 10.5% in 1988, and 10.3% in 1991. Small sample sizes make a definitive explanation of this trend impossible.

Table 1 compares the characteristics of frequent cocaine users in 1985 and 1991. Although only one of the comparisons was statistically significant at the .05 level, there are indications that frequent cocaine users are becoming older and that an in-

TABLE 1—Characteristics of Frequent Cocaine Users, 1985 and 1991			
	1985 (n = 41), %	1991 (n = 169), % (<i>P</i>)	
Age group			
12-17	17.9	8.1 (.115)	
18-25	44.5	33.1 (.156)	
2634	23.3	41.6 (.017)	
35+	14.4	17.2 (.393)	
Gender			
Male	69.7	61.9 (.231)	
Female	30.3	38.1 (.231)	
Race/ethnicity			
White	55.3	37.5 (.091)	
Black	34.0	39.7 (.328)	
Hispanic	10.7	18.1 (.111)	
Other drug use	82.8	86.8 (.278)	
Cigarettes, past y Got drunk weekly	48.0	32.0 (.068)	
Mariuana, past y	83.6	88.4 (.290)	
Manjuana, weekly	64.0	48.1 (.102)	
Heroin, lifetime	19.3	30.1 (.118)	
		18.3 (.071)	
Heroin, past y	8.5		

the hypothesis that the proportion in the dem graphic group is equal in 1985 and 1991.

creasing proportion are Black or Hispanic, which is consistent with trends in overall cocaine use seen in the National Household Survey. The aging of the population of frequent cocaine users is also evident from estimates of their average number of years since first cocaine use (5.1 in 1985, 5.4 in 1988, 7.4 in 1990, and 7.9 in 1991). Weekly drunkenness and weekly marijuana use appear to have decreased among frequent cocaine users since 1985, while heroin use has become more prevalent. Since 1985 over 80% of frequent cocaine users have reported cigarette and marijuana use in the past year. Data on past-year crack use and use of cocaine with a needle were collected on the National Household Survey beginning in 1988. Crack use increased significantly from 22.0% in 1988 to 52.5% in 1991 (P < .001), but needle use estimates indicate no significant change (17.6% in 1988 and 24.3% in 1991; P = .226).

Comparison of Frequent Cocaine Users with Nonusers and Infrequent Users

Compared with the general population and with infrequent cocaine users, frequent cocaine users were more likely to be Black or Hispanic and more likely to be living in large metropolitan areas. They were also more likely to be unmarried, to

TABLE 2—Comparison of Demographic and Other Characteristics of Frequent Cocaine Users vs Infrequent Users and Nonusers, 1991

	Frequent Users (n =169), %	Infrequent Users (n = 752), % (P)	Nonusers Aged 12–59 (n = 28 681), % (<i>P</i>)
Under age 18	8.1	4.7 (.075)	12.5 (.024)
Over age 34	17.2	27.3 (.077)	47.7 (.000)
Male	61.9	66.8 (.220)	47.8 (.006)
Black	39.7	10.7 (.000)	12.0 (.000)
Hispanic	18.1	8.4 (.006)	8.9 (.007)
Large metropolitan area	60.0	49.2 (.061)	43.0 (.003)
Unmarrieda	82.3	68.0 (.007)	40.5 (.000)
Less than high school ^b	43.2	23.0 (.002)	16.9 (.000)
College graduateb	6.6	11.6 (.146)	23.1 (.000)
Employed ^b	57.7	66.1 (.152)	75.5 (.005)
Unemployed ^b	32.4	24.7 (.146)	6.6 (.000)
Without insurance	39.4	31.9 (.158)	16.2 (.000)
On welfare	21.3	5.7 (.001)	5.4 (.000)

Note. P values refer to significance levels of a test of the hypothesis that the proportion in the demographic group is equal to the corresponding proportion for frequent users.

^aAmong persons aged 15 and older only.

^bAmong persons aged 18 and older only.

			N
Drug Use Pattern	Frequent Users, %	Infrequent Users, % (P)	Nonusers Aged 12–59, % (P)
Cocaine use pattern, past y			
Used crack	52.5	17.5 (.000)	
Smoked cocaine	56.9	23.6 (.000)	
Used with needle	24.3	9.3 (.008)	
Cocaine dependency			
Felt dependent on cocaine	42.4	5.4 (.000)	
Tried to cut down	62.2	30.7 (.000)	
Failed attempt to cut down	29.3	7.4 (.000)	
Other drug use			
Cigarettes, past y	86.8	74.6 (.003)	34.0 (.000)
Got drunk weekly	32.0	23.9 (.094)	3.0 (.000)
Marijuana, past y	88.4	86.6 (.340)	8.9 (.000)
Marijuana, weekly	48.1	35.6 (.054)	1.7 (.000)
Heroin, lifetime	30.1	14.5 (.018)	1.0 (.000)
Heroin, past y	18.3	3.0 (.001)	0.1 (.000)

have dropped out of high school, and to be on welfare (Table 2). Although differences between frequent and infrequent users were not significant in terms of gender, being a college graduate, and being employed, comparisons with nonusers showed that frequent users were significantly more likely to be male and to be unemployed and significantly less likely to be college graduates and to be employed. Frequent and infrequent users were more likely than nonusers to be without health insurance. About a third of frequent users were unemployed, and more than a third had no health insurance.

Frequent cocaine users had substantially higher rates of weekly drunkenness and use of cigarettes, alcohol, marijuana, and heroin than the general population (Table 3). Rates of weekly drunkenness and marijuana use were higher for frequent users than for infrequent users, but these differences were not statistically significant at the .05 level. More than one third of infrequent cocaine users and nearly one half of frequent users were weekly marijuana users. Cigarette and heroin use were significantly more likely among frequent users than among infrequent users.

Compared with infrequent users, frequent cocaine users were much more likely to have felt dependent on cocaine in the past year. They were more likely to have tried to cut down on their use in the past year, and also more likely to have

TABLE 4—Comparison of Criminal Behavior, Treatment, and Health Characteristics of Frequent Cocaine Users vs Infrequent Users and Nonusers, 1991

	Frequent Users, %	Infrequent Users, % (P)	Nonusers Ageo 12–59, % (P)
Criminal behavior, past y			
Violent behavior ^a	38.7	29.6 (.086)	7.8 (.000)
Property crime ^b	41.5	26.4 (.012)	6.3 (.000)
Arrested for:			
Any offense	34.6	24.2 (.053)	2.6 (.000)
Non-drug/alcohol offense ^c	21.9	9.5 (.007)	1.1 (.000)
Violent crime ^d	13.7	4.1 (.015)	0.4 (.001)
Property crime ^e	11.4	6.6 (.066)	0.7 (.000)
On probation ^f	20.6	7.3 (.004)	1.1 (.000)
On parole ^f	5.2	1.2 (.022)	0.2 (.005)
Treatment experience			
Psychiatric treatment, lifetime	20.7	17.1 (.275)	7.9 (.011)
Alcohol treatment, past y	16.1	6.8 (.018)	1.0 (.000)
Drug abuse treatment, past y ⁹			
At any location	30.0	11.2 (.002)	0.7 (.000)
At emergency room	7.8	2.3 (.029)	0.1 (.002)
At hospital	14.9	2.5 (.008)	0.1 (.002)
At doctor's office	3.1	2.2 (.275)	0.1 (.014)
At drug rehabilitation facility	21.6	4.0 (.002)	0.1 (.000)
At mental health center	8.2	2.3 (.036)	0.1 (.005)
Health status			
Excellent health, past yh	73.7	86.1 (.012)	90.9 (.000)
Hypertension, lifetime	13.4	12.7 (.434)	17.2 (.165)
Chest pain, lifetime	9.8	5.4 (.092)	5.4 (.072)
Lung condition, lifetime	20.8	16.8 (.233)	17.6 (.247)
Heart condition, lifetime	9.0	5.3 (.204)	7.2 (.339)

^aIncludes using a weapon or force to obtain money or things from a person, getting into a physical fight, and hurting someone badly enough to necessitate bandages or a doctor.

^bIncludes shoplifting, theft, vandalism, and breaking and entering.

Excludes persons arrested only for driving under the influence, drunkenness, or possession or sale of drugs.

^dIncludes aggravated assault, simple assault, battery, robbery, forcible rape, homicide, and nonnegligent manslaughter.

^eIncludes larceny, theft, burglary, breaking and entering, motor vehicle theft, and other property offenses. ¹At any time during the past year.

Based on responses to the question "Have you received treatment for your other drug use, not counting cigarettes or alcohol?" for each location. Depending on the interpretation by the respondent, this could include treatment for help in stopping drug use or treatment sought for a medical problem associated with drug use.

"Respondents' self-reported assessment of their overall health.

Includes emphysema, asthma, chronic bronchitis, pneumonia, pleurisy, and tuberculosis.

failed in an attempt to cut down. They had higher rates of crack use and use of cocaine with a needle.

Table 4 shows rates of criminal behavior and arrest among nonusers, infrequent users, and frequent users. It is clear from these data that cocaine users are much more likely to be involved in property crimes and violent acts than are nonusers. More than 40% of frequent cocaine users reported engaging in some type of property crime or violent act in the past year. Among cocaine users, frequent users were more likely to be involved in criminal activity and violence than infrequent users. It is interesting to note that while 41.5% of frequent cocaine users reported having committed a property crime in the past year, only 11.4% reported being arrested for such a crime.

Although rates of reported health problems were somewhat higher for frequent cocaine users, no significant differences (at the .05 level) across the three groups were found. Nearly 10% of frequent cocaine users reported having chest pains in their lifetime, compared with only 5.4% of infrequent users (P = .092). Frequent cocaine users were less likely than infrequent users or nonusers to report their overall health as excellent.

Frequent users were more likely than infrequent users to receive treatment for a drug problem. Nearly a third had some type of treatment in the past year. Cocaine users were also more likely to have had treatment for alcohol abuse. Frequent users were more likely than nonusers to have been treated for a psychiatric problem in their lifetime, but the rate for infrequent users did not differ from the rate for frequent users. Frequent users were significantly more likely than infrequent users to have received treatment for drug abuse at each type of location except a doctor's office. Twenty-two percent of frequent users reported receiving treatment for drug abuse at a drug treatment or rehabilitation facility. More detailed analyses of frequent cocaine users who reported being treated at a drug rehabilitation center (30 of the 169 frequent users) indicated that frequent cocaine users who had treatment were more likely to have used daily, to feel dependent on cocaine, to have tried to cut down on their cocaine use, and to have used heroin at some time during the past year. They were also older than frequent cocaine users who did not receive treatment. A similar proportion of treated and untreated respondents had insurance coverage and were on welfare. Frequent users who reported having treatment indicated lower rates of current cocaine use (53% used in the previous month) than did frequent users who did not report any treatment (83% used in the past month), providing evidence that treatment had some impact.

Discussion

The small sample sizes for frequent cocaine users in the 1985 through 1990 survevs make it difficult to interpret trends during that period. While not conclusive, the data support the hypothesis that the increasing use of crack and heroin by a stable (in terms of size) population of frequent cocaine users and their increasing age have contributed to the increases in consequences from 1985 to 1990. We found no evidence that increases in alcohol or marijuana use or cocaine use with a needle have had a significant impact on trends in consequences. We could not address the impact of changes in access to care, although we found that rates of insurance coverage were no different among frequent users who had received treatment and those who had not.

This study sheds some light on the relationship between consequences data, such as the estimates of drug-related emergency room episodes from the Drug Abuse Warning Network, and prevalence data from the National Household Survey. The latter data indicate that only 7.8% of frequent cocaine users, or about 50 000, had a drug-related treatment episode at an emergency room in the past year. Given the occurrence of multiple episodes for some users and additional epi-

sodes due to infrequent users (as seen in Table 4), the National Household Survey estimate of persons having a cocaine-related emergency room episode appears to be consistent in magnitude with that of the Drug Abuse Warning Network, which estimated 80 355 cocaine-related emergency room visits in 1990.¹⁸ The National Household Survey was conducted in early 1991, and weekly use refers to a pattern of weekly use in the year prior to the interview.

These data suggest that the Drug Abuse Warning Network is not a good measure solely of frequent cocaine use. While a large proportion of cocaine-related emergency room episodes involve frequent cocaine users, emergency room patients represent only a small percentage of the total population of frequent users. Thus, there is no reason that trends in the prevalence of overall cocaine use or frequent cocaine use should parallel trends in cocaine-related emergency room episodes.

The generalizability of our findings on the characteristics of frequent cocaine users is dependent on whether the National Household Survey sample of frequent users is representative. By design, cocaine users who are homeless (and not in shelters) or in prison are not counted in estimates from the survey, and research has shown these groups to have higher rates of cocaine use than the general population.^{19–23} Previous research has also suggested that the National Household Survey does not adequately cover the nonincarcerated criminal population.¹⁰

Some indication of how well the National Household Survey covers the nonincarcerated criminal population can be seen from comparisons with data from the Department of Justice. The 1991 National Household Survey estimates that about 1 million persons were arrested for violent crimes in 1990. Data from the Uniform Crime Reports show that there were 1.7 million arrests for violent crimes in 1990.22 Considering that these arrests involve substantially fewer than 1.7 million persons, because some persons are arrested multiple times during a year, and that some arrestees were incarcerated and never eligible for the National Household Survey, it appears that the survey covers a high percentage of violent criminals who are not incarcerated. A similar comparison of persons arrested for property crimes shows 1.6 million arrestees in the National Household Survey vs 3 million arrests in the Uniform Crime Reports. Department of Justice data indicate that approximately 4 million adults were on probation during 1990 and were eligible for the National Household Survey, while the survey estimate of adult probationers was 1.9 million.²³ The Department of Justice estimates that there were 630 000 adult parolees eligible for the survey, while the survey estimate of adult parolees was 441 000. Overall, it appears that the National Household Survey coverage of the population that has had contact with the criminal justice system is high. The underestimation of the criminal population in the survey is probably due to a combination of undercoverage and underreporting of criminal activity by respondents.

It should be mentioned that the National Household Survey estimates of cocaine use, treatment use, and criminal behavior are all based on self-report and are likely to be somewhat underreported. Previous research by the National Institute on Drug Abuse has shown treatment use and cocaine use to be underreported in a household sample of known former treatment patients.24,25 However, if underreporting is equally likely for all three of these types of data, then the estimates of rates of treatment use and criminal behavior among frequent cocaine users presented in this paper are less subject to bias than are estimates of the total number of frequent cocaine users, the total number of people receiving treatment, or the total number of arrestees.

We cannot rule out the possibility that the diverging trends in prevalence and consequences over time are partially the result of changes in reporting behavior. On the other hand, we find no evidence of such changes. Even if they did occur, it is unlikely that they could account for the magnitude of the increases in consequences and decreases in prevalence.

In conclusion, the data presented in this paper describing frequent cocaine users provide important descriptive information on a population of drug abusers who are likely to need treatment in the future. The findings are consistent with studies of vulnerability to drug abuse that identify criminal behavior, psychiatric problems, and poor school achievement as risk factors.²⁶ Consistent with other studies of heavy cocaine users, this study shows that treatment of cocaine abusers must address multiple problems that often occur in conjunction with cocaine abuse, including unemployment, low education, lack of health insurance, lack of family support, heavy use of other drugs, poor health status, and involvement in violence and criminal behavior.^{27–30} Furthermore, considering the level trend in the size of the population of frequent cocaine users, their aging, and their apparently increasing use of heroin, it appears that there will be a continuing substantial need for treatment for cocaine abuse. \Box

Acknowledgments

We thank Zili Amsel, ScD, Ralph Folsom, PhD, Steve Gust, PhD, Lana Harrison, PhD, and Marvin Snyder, PhD, for their helpful comments during the preparation of this manuscript.

References

- National Household Survey on Drug Abuse: Main Findings 1990. Rockville, Md: National Institute on Drug Abuse; 1991. DHHS publication ADM 91-1788.
- Gfroerer J, Brodsky M. The incidence of illicit drug use in the United States, 1962– 1989. Br J Addict. 1992;87:1345–1351.
- Harrison LD. Trends in illicit drug use in the United States: conflicting results from national surveys. *Int J Addict*. 1992;27: 817–847.
- 4. Drug Abuse and Drug Abuse Research. Third Triennial Report to Congress from the Secretary, DHHS. Rockville, Md: National Institute on Drug Abuse; 1991. DHHS publication ADM 91-1704.
- 5. *HHS News.* Washington, DC: US Dept of Health and Human Services; October 1992. Press release.
- State Resources and Services Related to Alcohol and Other Drug Abuse Problems, Fiscal Year 1990. Rockville, Md: National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism; 1992. DHHS publication ADM 92-1905.
- National Household Survey on Drug Abuse: Population Estimates, 1991. Rockville, Md: National Institute on Drug Abuse; 1991. DHHS publication ADM 92-1887.
- National Household Survey on Drug Abuse: Population Estimates, 1990. Rockville, Md: National Institute on Drug Abuse; 1991. DHHS publication ADM 91-1732.
- National Household Survey on Drug Abuse: Population Estimates, 1988. Rockville, Md: National Institute on Drug Abuse; 1989. DHHS publication ADM 89-1636.
- Wish ED. U.S. drug policy in the 1990s: insights from new data on arrestees. Int J Addict. 1990–1991;25:377–409.
- Hard-core Cocaine Addicts: Measuring and Fighting—the Epidemic. Washington, DC: Committee on the Judiciary, United States Senate; 1990.
- Kleber HD. Tracking the cocaine epidemic. The Drug Abuse Warning Network. JAMA. 1991;266:2272-2273.
- National Drug Control Strategy. Washington, DC: Office of National Drug Control Policy; 1991.
- Schober S, Schade C, eds. The Epidemiology of Cocaine Use and Abuse. Rockville, Md: National Institute on Drug Abuse; 1991. DHHS publication ADM 91-1787.

- Turner CF, Lessler JT, Gfroerer JC, eds. Survey Measurement of Drug Use: Methodological Studies. Rockville, Md: National Institute on Drug Abuse; 1992. DHHS publication ADM 92-1929.
- Rouse BA, Kozel NJ, Richards LG, eds. Self-Report Methods of Estimating Drug Use. Rockville, Md: National Institute on Drug Abuse; 1985. DHHS publication ADM 85-1402.
- Kalton G, Kasprzyk D. Imputing for missing survey responses. Presented at the annual meeting of the American Statistical Association; August 16–19, 1982; Cincinnati, Ohio.
- Annual Emergency Room Data 1990. Rockville, Md: National Institute on Drug Abuse; 1991. DHHS publication ADM 90-1839.
- Milburn NG, Booth JA, Miles SE. Correlates of drug and alcohol abuse among homeless adults in shelters. Washington, DC: Institute for Urban Affairs and Research, Howard University; 1990.

- The Way Home: A New Direction in Social Policy. New York, NY: New York City Commission on the Homeless; 1992.
- Prevalence of Drug Use in the Washington DC Metropolitan Area Homeless Population: 1991. Rockville, Md: National Institute on Drug Abuse. In Press.
- 22. Sourcebook of Criminal Justice Statistics 1991. Washington, DC: US Dept of Justice, Bureau of Justice Statistics; 1992.
- 23. Correctional Populations in the United States, 1990. Washington, DC: US Dept of Justice, Bureau of Justice Statistics; 1992.
- 24. Harrell AV, Kapsak KA, Cisin IH, Wirtz PW. The Validity of Self Reported Drug Use Data: The Accuracy of Responses on Self-Administered Answer Sheets. Rockville, Md: National Institute on Drug Abuse; 1986.
- 25. Gfroerer JC. Overview of the National Household Survey on Drug Abuse and related methodological research. Presented at the annual meeting of the American Sta-

tistical Association; August 9-13, 1992; Boston, Mass.

- Glantz M, Pickens R, eds. Vulnerability to Drug Abuse. Washington, DC: American Psychological Association, 1992.
- Adams EH, Gfroerer JC. Elevated risk of cocaine use in adults. *Psychiatric Ann.* 1988;18:523–527.
- Flewelling RL, Rachal JV, Marsden ME. Socioeconomic and Demographic Correlates of Drug and Alcohol Use: Findings from the 1988 and 1990 National Household Surveys on Drug Abuse. Rockville, Md: National Institute on Drug Abuse; 1992. DHHS publication ADM 92-1889.
- De La Rosa M, Lambert EY, Gropper B, eds. Drugs and Violence: Causes, Correlates, and Consequences. Rockville, Md: National Institute on Drug Abuse; 1990. DHHS publication ADM 91-1721.
- Nurco DN, Hanlon TE, Kinlock MA. Recent research on the relationship between illicit drug use and crime. *Behav Sci Law.* 1991;9:221–242.

Conference on Silica, Silicosis, and Cancer to Be Held in October

The Second International Symposium on Silica, Silicosis, and Cancer will be held October 28 through 30, 1993, at the ANA Hotel, San Francisco, Calif. It will offer an interdisciplinary platform to address the most salient issues related to silica and cancer risk and to suggest options for policy and future research. The first Symposium, held in 1984, attracted scientists, physicians, industry and labor representatives, and policymakers and set an international research agenda.

The symposium is sponsored by the US National Institute for Occupational Safety and Health, the University of California Center for Occupational and Environmental Health, and the Western Consortium for Public Health. The Symposium will address these topic areas: history of silica-related diseases; diagnostic procedures for pulmonary ailments; occupational and environmental silica dust sampling; pulmonary physiology and cell biology of silica-related pathologies; animal tumor biology and contrasts between silica and other particulates; biogenic silica and other mineralogical species of quartz; epidemiology of silica, silicosis, and cancer; mechanisms and species differences linking fibrosis and neoplasia; cancer and noncancer risk assessments for silica; and international research and policy needs for the next decade.

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