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Drug Abuse Information
and Monitoring Project



California Department of
Alcohol and Drug Programs
Chauncey L. Veatch III, Director

DRUG ABUSE SERIES

COCAINE USE AND PREGNANCY

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The Monograph Series, issued by the Drug Abuse Information and Monitoring Project, is prepared for and funded by the State of California Department of Alcohol and Drug Program under contracts # D-0053-5 and D-0001-7. The primary purpose of this series is to provide information to the drug abuse treatment community and to the general public on the epidemiology and treatment of new and changing conditions in drug abuse.

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COCAINE USE AND PREGNANCY

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April 1988

The author would like to acknowledge the assistance of Kathleen West.

Edited by Cindy Higashi Wade.

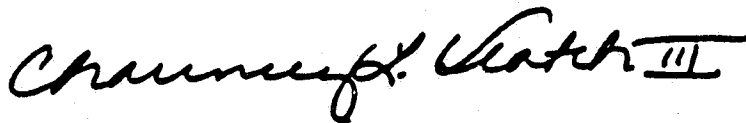
PREFACE

In September 1986, the California Department of Alcohol and Drug Programs (ADP) formally sponsored the initiation of the Drug Abuse Information and Monitoring Project (DAIMP) at UCLA. One of the primary objectives of this project is to conduct ethnographic and epidemiological research in order to provide information on new and changing conditions in drug abuse trends. A secondary objective of the project is to provide an assessment of the extent of drug abuse to social policy makers for adequate planning and allocation of resources to deal with the prevention and treatment needs. As a third objective, DAIMP will produce a series of research monographs focusing on special drug abuse issues that are useful to California's drug program network.

The problem of drug abuse has been recently compounded by several developments. These developments include the increase in amounts of traditional drugs (e.g., heroin and cocaine) being imported into the United States by an increasing number of routes, the appearance of new forms of cocaine (e.g., freebase and crack), and the increase in frequency of cocaine use by pregnant women.

Clinicians and health practitioners in obstetrics and gynecology, pediatrics, and in drug treatment centers are facing an overload of patients. There are currently very few facilities within the state or county which specialize in the problems of substance-abusing pregnant women, the addicted mother and her baby. The limited facilities which do exist do not always have the immediate resources to meet the increasing demand for services (see Lazarus and West, 1987). A recent nationwide campaign launched by the March of Dimes to inform persons of the dangers of drug use during pregnancy is a positive step in the right direction, but more efforts are needed specifically in the areas of education, prevention, and treatment.

As part of the DAIMP drug abuse series, this monograph presents general information about cocaine and specific information about cocaine abuse and its effects on pregnancy. It is intended to educate treatment specialists, drug educators, and physicians as well as the lay public about the problems associated with cocaine use during pregnancy. As part of the continuing research on drug abuse, the current monograph represents an important contribution to the understanding and treatment of a serious problem facing our society.



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FACT SHEET

WHAT IS COCAINE AND WHAT ARE ITS DIFFERENT FORMS?

Cocaine, in its various forms, is a central nervous system (CNS) stimulant. Cocaine hydrochloride is a crystalline powder. Cocaine freebase and "crack" are more potent forms of cocaine which have been extracted from cocaine hydrochloride.

HOW IS COCAINE MOST COMMONLY USED?

Cocaine hydrochloride is most often inhaled nasally, (e.g., sniffed or snorted through a straw or from a spoon) but can also be injected. The "high" from a single hit usually lasts about twenty minutes. Freebase and crack are usually smoked in water pipes and produce a more rapid, intense and short-lived euphoria. However, the feelings of euphoria are usually followed by feelings of irritability and restlessness and may contribute to adverse health consequences.

WHO IS USING COCAINE?

The median age at onset for cocaine use is during the young adult years (ages 18-25). The highest prevalence of cocaine use is also amongst this age group; the second highest prevalence group is those ages 26-34.

WHY ARE PEOPLE USING COCAINE?

Since the 1970s when it was believed to be a recreational drug with no dangerous side effects, cocaine use reached epidemic proportions and continues to increase. The intense euphoria can lead to psychological addiction to cocaine, and recent studies suggest there is physical addiction as well. A rise in cocaine overdoses and deaths are gradually leading to a greater awareness of the dangers of cocaine.

WHAT IS KNOWN ABOUT THE TERATOGENIC¹ EFFECTS AND TOXICITY OF COCAINE USE DURING PREGNANCY?

Studies have shown that maternal cocaine use may cause abruptio placentae (i.e., premature separation of the placenta from the uterus) which can lead to spontaneous abortion and maternal hemorrhage. Babies born to cocaine-using women often undergo withdrawal syndrome, exhibiting symptoms such as jitteriness, irritability, and flat-sucking. Other studies have shown an increased risk of sudden infant death syndrome (SIDS), prematurity and low birth weight. Animal research suggests the presence of eye, brain, and bone defects in infants exposed to cocaine in utero.

¹ Teratogenesis refers to the development of physical defects in the embryo.

EXECUTIVE SUMMARY

The 1980s witnessed an epidemic increase in cocaine use, new methods of ingestion and new varieties of cocaine. In particular, the introduction of "crack" and rock cocaine have led to greater problems.² Whereas the use of cocaine in the 1960s and 1970s was thought to be safe, current research indicates that cocaine is both physically and psychologically addicting. Moreover, the effects of crack use are more powerful than those of cocaine because it is ingested quicker and there is a more intense "crash". The rapid and intense euphoria is followed by feelings of restlessness and irritability and a desire to repeat the experience. An unfortunate result of the increase in cocaine use among women is the discovery that serious health consequences can occur with cocaine use during pregnancy both to the women and their unborn children.

The increasing rates of cocaine use by women are documented by several reports, including the Drug Abuse Warning Network (DAWN), the National Institute on Drug Abuse Household Survey, and the CAL-DADS reports which monitor admissions to drug treatment programs. There have been increases in emergency-room mentions and drug-related deaths due to cocaine use (NIDA, 1987) and in the percentage of women admitted to treatment programs. Moreover, the proportion of pregnant women in treatment programs increased dramatically, up 118% from 1984 to 1985 (CEWG, 1986).

Sniffing or snorting is reportedly the most frequent method of cocaine use, but this may change as the use of crack becomes more widespread. A single inhalation or numerous inhalations may be taken. The "high" from a single line, or "hit", usually lasts about twenty minutes. Freebase and crack are smoked in pipes or cigarettes mixed with tobacco or marijuana or in a waterpipe. Smoking produces a more rapid and intense euphoria than sniffing. However, the initial feelings of energy, power, and competence are soon replaced with restlessness, irritability, and a desire to keep on freebasing (Cohen, 1981). The effects from intravenous injection of cocaine vary according

² The reader is referred to Dana Hunt's paper on crack in the DAIMP Drug Abuse Series for further information.

to the dosage level and the rate of administration. The high is immediate and typically lasts 10-15 minutes. Again, the effects are similar to smoking in that users have a strong desire to repeat the experience.

Cocaine acts directly on the central nervous system (CNS) producing effects similar to those of other stimulants and to some anesthetics. Cocaine alters the metabolism of specific neurotransmitters (e.g., norepinephrine, dopamine, serotonin, and acetylcholine) in normal interneural communication (Jones, 1984)³. This brain (CNS) stimulation causes an increase in heart rate, accompanied by vasoconstriction, pupil dilation, a rise in blood sugar, and a feeling of euphoria (Gay, 1981). Cocaine also decreases appetite, increases restlessness, and induces lack of sleep. Hypertension and hypermetabolism may lead to convulsion and/or CNS hemorrhage (Gay, 1981).

Depending on the chronicity of use and dosage, an astonishingly large and varied number of acute and chronic effects of cocaine use have been reported. These include physical complaints (e.g., blurred vision, dizziness, muscle pain, dysarthria⁴, dry skin, chest pains, insomnia, weight loss, and tremors), cardiac and respiratory failure, and seizures. Psychological system effects include paranoia, visual hallucinations, delusions, cravings, antisocial behavior, anxiety, irritability, lethargy, depression, tactile hallucinations, and tremors.

Cocaine abuse is more frequent among freebase smokers and intravenous (IV) users as there is a higher potential for toxicity. Side effects of crack use include increased aggression, depression, heart palpitations, arrhythmia⁵, and heart attack. Use of crack by pregnant women and nursing mothers may be associated with damage to the fetus as cocaine passes through the

³ Research studies have shown that cocaine blocks norepinephrine reuptake at the synaptic junction, leaving an excess of catecholamine neurotransmitters.

⁴ Dysarthria refers to difficulty in speaking or poorly articulated speech which are usually related to motor nerve damage.

⁵ Arrhythmia is any change in the normal pattern of the heartbeat.

placenta and/or breast milk (Gold, 1987). Withdrawal syndrome is characterized by depression, social withdrawal, irritability, cravings, tremors, muscle pain, eating disturbances, electroencephalographic (EEG) changes, decreased energy, and excessive sleeping (Jones, 1984; Gold, 1987).

EFFECTS OF COCAINE USE DURING PREGNANCY

There are few studies of the effects of cocaine use during pregnancy and those that do exist are often methodologically flawed. Many are case studies by physicians with no control group and little information regarding the patient's drug use history. Nevertheless, studies which point out the adverse side effects of cocaine use during pregnancy do exist.

Many studies indicate that maternal cocaine use during pregnancy can lead to abruptio placentae⁶ and spontaneous abortion of the fetus. Studies on pregnant ewes have led researchers to believe that cocaine increases maternal blood pressure and decreases uterine blood flow. One possible consequence of this is fetal hypoxemia (lack of oxygen). Cocaine abuse by pregnant women is also associated with prematurity, low birth weight, and intrauterine growth retardation. Cocaine-exposed infants often display the following withdrawal symptoms: tremulousness, muscular rigidity, rapid breathing, irritability, jitteriness, vigorous sucking, and poor state control. There have been no studies on the long-term effects on the cocaine-exposed infant.

The increase in cocaine use by all women, particularly among those who are of childbearing age (18-40) or who are already pregnant, has important implications for the medical profession and drug treatment programs. Health care providers must be able to identify pregnant drug users and, knowing the potential effects of the drug, be able to advise the patient accordingly. It is essential that pregnant women be informed of the possible effects of their drug use on the fetus and the newborn.

Prevention and intervention strategies can help to reduce the deleterious effects of drug use during pregnancy. Federal, state, and local agencies can provide the impetus to fund public education. Enrollment in prenatal care and/or drug treatment programs can help inform women of the dangers of cocaine use during pregnancy. Therapeutic family day-care centers with programs for drug-abusing women and their children provide an important environment for parent training.

⁶ Abruptio placentae is the parting of the placenta from the uterus before birth.

I. INTRODUCTION

The 1980s have witnessed an epidemic increase in cocaine use, new methods of ingestion and new varieties of cocaine. Statistics from emergency room records, coroners' reports, and drug treatment clinics indicate an increase in cocaine use among all socioeconomic levels, ethnic groups, and both sexes. Cocaine is no longer perceived as the "safe", recreational drug of the 1970s; it has become known as a dangerous substance with high potential for abuse and addiction. Unfortunately, there is an extreme lack of public awareness of the dangers of cocaine use. However, the media has facilitated public education by dramatizing events such as serious injuries to and deaths of movie stars, athletes, and other celebrities. In addition, during the last few years, there has been an increase in television advertisements for drug abuse treatment programs. Recently, the March of Dimes launched an advertising campaign aimed at prevention of drug use by pregnant women.

Although the increase in cocaine use and the high potential for drug addiction are by themselves problematic, of greater concern are the serious effects of cocaine use on society. The economics of drug use are a major problem. Compulsive users tend to spend a large portion of their income maintaining their habit. This can lead to unemployment, family instability and, often, to criminal activity. Another problem is the decrease in productivity and efficiency in the workplace. Cocaine use, in particular, has been directly related to traffic and work place accidents, violent crime and police corruption. Finally, cocaine use has a major impact on public health resources and costs. Not only is there a burden on the health profession to provide care for these individuals, but there is also an increase in health insurance premiums as a result of the increase in health-related problems and drug treatment admissions.

Although there is a paucity of literature on the problems of cocaine use during pregnancy, there is increasing evidence of serious health consequences of cocaine use during pregnancy. For example, there may be maternal complications during pregnancy such as hypertension, seizures, respiratory arrest and cardiac failure (Ritchie and Greene, 1980). There is also a greater incidence

of spontaneous abortion (Chasnoff, Burns, Schnoll, & Burns, 1985). Second, there may be complications during and after delivery. Statistics indicate that the number of admissions to neonatal intensive care units due to cocaine exposure in utero has risen sharply in the past few years.

II. ORIGINS OF COCAINE

There is both archaeological and anthropological evidence that coca leaves were extensively used by the Indians in South America (Siegel, 1982). By the mid-1800s, coca had spread to Europe where it was used in various medical and nonmedical preparations such as wines, cigarettes, and chewing gum. After isolation of cocaine (an alkaloid) and early experimentation which revealed its stimulant and local anesthetic properties, it was proclaimed a "wonder" drug (Siegel, 1984). The use of cocaine was curtailed by the 1914 Harrison Act which labeled it as a narcotic. This act restricted and controlled the manufacture, possession, sale, and distribution of cocaine. Thus, an early epidemic of cocaine use for recreational and medical purposes was effectively thwarted by the federal legislation.

Illicit use of cocaine re-emerged in the 1970s. It has been suggested that this rediscovery was inevitable due to the drug's euphoric and stimulant properties (Gay and Inaba, 1976). However, it is also probable that cocaine was only one of many drugs that proliferated during the drug culture in the United States in the 1960s and 70s. In that period, cocaine users generally believed cocaine was safe to use as a recreational drug because it was not addictive. Some of the myths about cocaine which expanded its use include: it is an aphrodisiac, it increases creative and physical performance, it reduces fatigue and appetite, and it causes euphoria (Ashely, 1975; Gottlieb, 1976; Phillips and Wynne, 1980).

Between 1970 and 1973 when cocaine use dramatically increased, the patterns of use changed and the adverse effects of cocaine were first noted. The onset of intravenous use of cocaine and smoking freebase were associated with cocaine abuse and serious side effects,

including overdose and death. The first medical admission to an emergency room for freebase smoking occurred in 1974 at UCLA (Siegel, 1979).

In the 1980s, the epidemic of "crack" and rock cocaine use have brought even more problems¹. The effects of crack use are more powerful than those of cocaine because it is ingested quicker and there is a more intense "crash".

One response to the new epidemic has been to increase the public's awareness of the dangers of cocaine use. The National Institute on Drug Abuse (NIDA) has launched a major media and public education campaign aimed at the prevention of cocaine use (Prevention Networks, April 1986). A telephone hotline for cocaine users was set up in May of 1983 by Washton, Gold, and Pottash (1984). Over 70,000 calls were logged during the first three months of operation. Despite these and many other efforts, cocaine use has increased dramatically in the 1980s.

III. STATISTICS

A. Incidence/Prevalence

Statistics from the National Survey on Drug Abuse² from 1972 to 1982 (Abelson and Miller, 1985) show a slight increase in prevalence of cocaine use among young adults (ages 18-25) in 1972-1975, followed by a sharp increase from 1976 to 1979, and a leveling off from 1979 to 1982 (from 9% in 1972 to 28% in 1985) (see Figure 1). For youth and older adults, there has been a general increase in lifetime prevalence rates (from 1.5% to 6.5% and from 1.6% to 8.5%, respectively, from 1972 to 1982). For all age groups, in 1982 the estimated prevalence of persons ever trying cocaine was 22 million (Abelson & Miller, 1985). In comparison, the estimated number of frequent users of cocaine (i.e., within the past month) is over 4 million persons.

¹ The reader is referred to Dana Hunt's paper on Crack in the DAIMP Drug Abuse Series for further information.

² The National Survey on Drug Abuse is a series of nationwide studies that began in 1971 under the sponsorship of the National Commission on Marijuana and Drug Abuse. Currently, it is conducted jointly by the Response Analysis Corporation and George Washington University and is sponsored by NIDA. The National Survey is a self-report interview with a nationwide household probability sample.

There is very little research which provides statistics on cocaine use during pregnancy. Yet it is possible to determine an estimate of the prevalence among women of childbearing age from the National survey. Table 1 shows that the highest proportion of users among females is among those of childbearing age (ages 18-34).

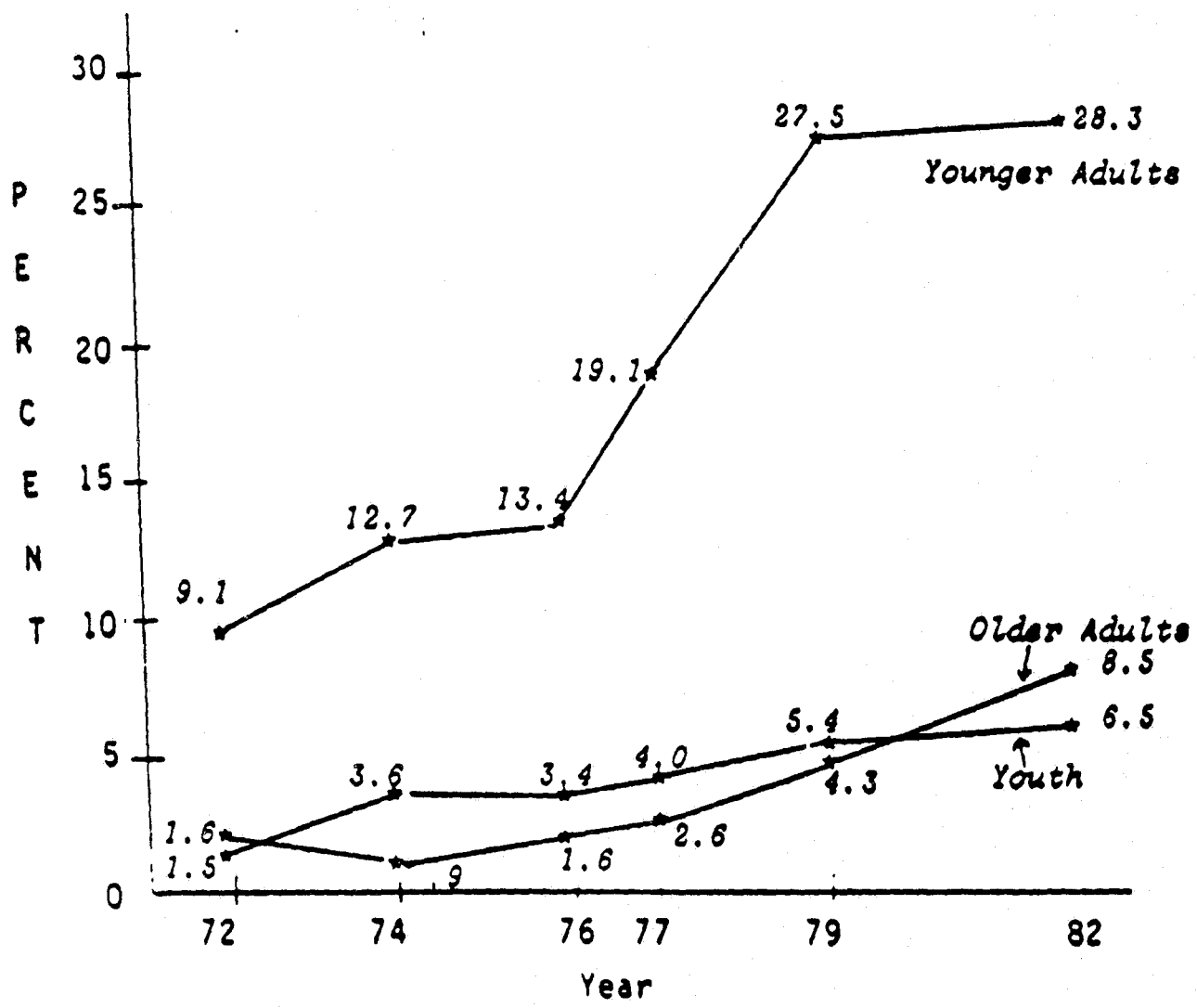


FIGURE 1

Trends in lifetime prevalence of cocaine use for three age groups (1972-1982)

Source: Abelson & Miller, 1985, p. 40.

Table 1

**Cocaine Prevalence Rates Based on
the 1982 National Survey on Drug Abuse³**

Percent Who Used Cocaine

	<u>Ever</u>	<u>Past Year</u>	<u>Past 30 Days</u>
Males			
Youth, 12-17 years old	7	5	2
Young Adults, 18-25 years old	35	25	9
Mid-Adults, 26-34 years old	26	13	4
Older Adults, 35 or older	7	3	1
Females			
Youth, 12-17 years old	6	3	2
Young Adults, 18-25 years old	22	13	5
Mid-Adults, 26-34 years old	18	9	3
Older Adults, 35 or older	2	1	0

In a survey of young adults in New York State, Kandel et al. (1985:92) reported that "women who used cocaine exclusively are less likely to have had a child". However, their data show that 46% of women who use cocaine along with other drugs have had a child, as had 46% of those who used only marijuana. In comparison, 72% of non-drug-using females were parents.

The increasing rates of cocaine use by women in the past few years are documented in several reports. In the survey of callers in the New York tri-state area to the Cocaine Hotline, Gold et al. (1985) found a large increase in the proportion of female users from 1983 to 1984 (24% to 42%). Figures from the Drug Abuse Warning Network (DAWN) also indicate an increase in Emergency-Room mentions and drug-related deaths due to cocaine use (NIDA, 1987). According to statistics presented at the Community Epidemiology Work Group (CEWG) Meetings (1986), the percentage of women admitted in 1985 to treatment programs in Los Angeles for cocaine use rose from 31% in

³ From: R. Clayton, 1985, p. 11.

1983 to 36% (Husson & Strantz). Moreover, the proportion of pregnant women in treatment programs increased dramatically, up 118% from 1984 to 1985. The increase among pregnant females seeking treatment for cocaine surpassed the increase in pregnant women seeking treatment for any other drug⁴. This situation is particularly problematic because many programs are oriented towards treatment for heroin addicts.

Statistics obtained from the California Department of Alcohol and Drug Programs (ADP) (see Tables 2-4) present epidemiological indicators of the extent of cocaine use by females in California. Table 2, which was constructed from CAL-DADS data, presents the number and percent of females admitted to drug treatment programs by age group category. Over 65% of the women admitted to drug treatment programs in California were between the ages of 21 and 30. The highest percentage of cocaine users are those between the ages of 16 and 35. Statistics for Los Angeles, San Diego and San Francisco from the DAWN system (see Table 3) indicate that the number of Emergency-Room deaths attributable to cocaine increased steadily from 1981 to 1984 while the ratio of males to females remained fairly constant. Other data on cocaine-related deaths (see Table 4) indicate a general increase in the number of deaths from 1980 to 1985. Although a high proportion of deaths among females occurred among those ages 21-35, the percentages vary in each age category from year to year. In summary, the available statistics indicate that cocaine use has increased among women, especially those of childbearing age.

⁸ See June 1986 CEWG proceedings

TABLE 2
CAL-DADS
Admissions for Cocaine to Drug Treatment Programs
Females Only 1982-1986

Age	1982-1983		1983-1984		1984-1985		1985-1986	
	N	%	N	%	N	%	N	%
0-15	15	1.2	14	1.0	19	0.7	35	1.1
16-20	189	15.6	185	13.5	335	13.0	400	12.4
21-25	441	36.5	553	40.3	932	36.2	1148	35.6
26-30	316	26.2	368	26.8	786	30.5	971	30.2
31-35	162	13.4	169	12.3	326	12.7	449	14.0
36-40	60	5.0	59	4.3	121	4.7	153	4.8
41 +	25	2.1	25	1.8	55	2.1	63	2.0
TOTAL	1208	100.0	1373	100.0	2574	100.0	3217	100.0

Source: California State Department of Alcohol and Drug Programs

TABLE 3
DAWN Drug Mention Deaths for Cocaine*

	<u>Los Angeles</u>		<u>San Diego</u>		<u>San Francisco</u>	
	<u>Number of Females</u>	<u>% of Total</u>	<u>Number of Females</u>	<u>% of Total</u>	<u>Number of Females</u>	<u>% of Total</u>
1982	97	36.6	42	43.8	55	33.1
1983	139	35.2	40	40.0	82	38.0
1984	418	40.3	69	50.0	150	31.7

Source: California State Department of Alcohol and Drug Programs

* Includes drug-related and drug-induced deaths.

TABLE 4
Cocaine Deaths*
Females by Age Group

	<u>1980</u>		<u>1981</u>		<u>1982</u>		<u>1983</u>		<u>1984</u>		<u>1985</u>	
	N	%	N	%	N	%	N	%	N	%	N	%
<u>State</u>												
0-15	1	10.0	0	0.0	0	0.0	1	3.3	1	2.9	1	3.2
16-20	1	10.0	2	16.7	2	10.0	3	10.0	2	5.7	2	6.5
21-25	5	50.0	1	8.3	5	25.0	12	40.0	10	28.6	5	16.1
26-30	2	20.0	3	25.0	7	35.0	5	16.7	11	31.4	10	32.2
31-35	1	10.0	4	33.3	3	15.0	6	20.0	7	20.0	6	19.4
36-40	0	0.0	1	8.3	2	10.0	0	0.0	2	5.7	1	3.2
41 +	0	0.0	1	8.3	1	5.0	3	10.0	2	5.7	6	19.4
TOTAL	10		10		20		30		35		31	
<u>Los Angeles</u>												
0-15	1	25.0	0	0.0	0	0.0	0	0.0	0	0.0	1	7.1
16-20	0	0.0	2	33.3	1	9.1	2	11.8	0	0.0	0	0.0
21-25	0	0.0	1	8.3	3	27.3	6	35.3	3	17.6	2	14.3
26-30	2	50.0	0	0.0	2	18.2	3	17.6	8	47.1	4	28.6
31-35	1	25.0	3	33.3	3	27.3	5	29.4	5	29.4	4	28.6
36-40	0	0.0	1	8.3	2	18.2	0	0.0	1	5.9	0	0.0
41 +	0	0.0	0	0.0	0	0.0	1	5.9	0	0.0	3	21.4
TOTAL	4		6		11		17		17		14	

Source: California Department of Alcohol and Drug Programs, from Vital Statistics

* Includes only drug-induced deaths

B. Demographics

The demographic characteristics of cocaine users have not changed significantly for several years. Data from the 1982 National Survey show that there is a correlation between education, income, occupational prestige and cocaine use. Those groups with the largest percentage of users tend to be college-educated (or higher), employed in a managerial profession, and earning over \$50,000 a year. Other studies have shown that the greatest proportion of users are white males (Gold, Washton, and Dackis, 1985; Schnoll, Karrigan, Kitchen, Daghestani & Hansen, 1985; Schuster and Fischman, 1985).

The recent "crack" epidemic has resulted in a slight change in demographics. Information from neonatal screens in Los Angeles indicates that cocaine is the most widely used drug among low income Blacks and Hispanic women (West, 1987)⁵. This new pattern is probably related to the increased availability and lower cost of rock cocaine (crack) in specific areas.

C. Social and Psychological Characteristics of Users

According to the NIDA National Household Survey data, the median age at onset of cocaine use is during the young adult period (ages 18-25). Most of those reporting cocaine use in 1982 had begun using cocaine two to three years prior to the survey. However, cocaine users may also be polydrug users who started using other drugs at earlier ages. For example, O'Malley, Johnston and Bachman (1985) point out similarities between marijuana users and cocaine users. Kandel et al. (1985) have suggested that marijuana use in adolescence predicts later cocaine use. Father's educational level was also a significant predictor among women; other predictors were adolescent use of cigarettes and alcohol. In addition, peer-related factors including degree of peer activity and peer orientation were found related to cocaine use. Most respondents have reported they used cocaine for the following reasons: (1) to experiment, (2) to get high, and (3) to have a good time with friends (O'Malley, Johnston, and Bachman, 1985). The picture of the cocaine user, then, is that

⁵ In the 1986-7 program reporting forms of the Child Abuse Prevention Office for Los Angeles County which is approximately 8% Black and 35% Hispanic, there were 70% Blacks, 16% Hispanic, and 14% White women who had used cocaine according to neonatal screens.

of a polydrug user who started using cocaine after initial marijuana use and whose first experience with cocaine was within his/her peer group.

IV. PSYCHOPHARMACOLOGY

A. Methods of Use

In the United States, there are three primary methods of use: sniffing (snorting), smoking, and intravenous injection.

Sniffing or snorting is reportedly the most frequent method but this may change as the use of rock cocaine becomes more widespread. The cocaine hydrochloride is chopped into powder on a surface (usually glass) and formed into a "line". The line is inhaled through a straw or similar device. A single inhalation or numerous inhalations may be taken. The "high" from a single line, or "hit", usually lasts about twenty minutes.

Coca paste smoking was first reported in San Francisco and Los Angeles in the 1970s (Cohen, 1981). Cocaine base (freebase) smoking has become increasingly popular. Kits are sold with which to convert cocaine hydrochloride into freebase. First, the cocaine hydrochloride is dissolved in a mixture of water and baking soda. Then the freebase is extracted by adding a solvent which "frees" the cocaine from the water. When the solvent is heated to a very high temperature it evaporates, leaving behind a solid residue of freebase cocaine. This extraction process for freebase can be dangerous because the organic solvents involved are highly volatile. On the other hand, "crack", which is also a form of freebase, is extracted by combining cocaine hydrochloride with a solution of ammonia or baking soda and water. When heated or agitated, the purified cocaine forms an oil which separates from the water. The remaining cocaine solidifies into chunks or rocks. Freebase and crack are smoked in waterpipes or cigarettes mixed with tobacco or marijuana. Smoking produces a more rapid and intense euphoria than sniffing.

The effects from intravenous injection of cocaine vary according to the dosage level and the rate of administration. The high is immediate and typically lasts 10-15 minutes.

B. Effects of Cocaine Use

Cocaine acts directly on the central nervous system (CNS) producing effects similar to those of other stimulants and to some anesthetics. Cocaine alters the metabolism of specific neurotransmitters (e.g., norepinephrine, dopamine, serotonin, and acetylcholine) in normal interneural communication (Jones, 1984)⁶. This brain (CNS) stimulation causes an increase in heart rate, accompanied by vasoconstriction, pupil dilation, a rise in blood sugar levels, and a feeling of euphoria (Gay, 1981). Cocaine also decreases appetite, increases restlessness, and induces a reduced need for sleep. Hypertension and hypermetabolism may lead to convulsion and/or CNS hemorrhage (Gay, 1981).

Cocaine users appear to progress through four stages of intoxication: euphoria, dysphoria, paranoia and psychosis (hallucinations and delusions). Some individuals experience these stages in a single episode, others may experience them with chronic low dosage patterns of use. Depending on the chronicity of use and dosage, an astonishingly large and varied number of acute and chronic effects of cocaine use have been reported. These include physical complaints (e.g., blurred vision, dizziness, muscle pain, dysarthria⁷, dry skin, chest pains, insomnia, weight loss, and tremors), cardiac and respiratory failure, and seizures. Psychological system effects include paranoia, visual hallucinations, delusions, cravings, antisocial behavior, anxiety, irritability, lethargy, depression, tactile hallucinations, and tremors.

In a survey of callers to the 800-hotline, Gold found the following symptoms specific to the various methods of administration (1978:774):

- (1) Intranasal users typically exhibit nasal sores or bleeding, sinus congestion and headaches, chronic rhinitis,⁸ and 'sniffing.'

⁶ Research studies have shown that cocaine blocks norepinephrine reuptake at the synaptic junction, leaving an excess of catecholamine neurotransmitters.

⁷ Dysarthria refers to difficulty in speaking or poorly articulated speech which are usually related to motor nerve damage.

⁸ Rhinitis is the inflammation of nasal mucous membranes and nasal discharge,

- (2) **Freebasers exhibit chronic cough, sore throat, and chest congestion that may be associated with longer term lung damage and pulmonary dysfunction.**
- (3) **Intravenous users often suffer from abscesses at injection sites and serious infections such as hepatitis or endocarditis.⁹**

Irrespective of the route of administration, cocaine can trigger an acute toxic reaction, which may be characterized by dizziness, blurred vision, confusion, paranoia, and tremulousness that sometimes leads to convulsions, cardiac arrhythmia¹⁰, and respiratory or cardiac failure requiring immediate medical intervention. Relatively recent reports of death from intranasal cocaine have shown that toxic blood levels of the drug can in fact be achieved by this route of administration (1984:774).

C. Abuse and Addiction

Cocaine abuse is more frequent among freebase smokers and IV users as there is a higher potential for toxicity. Both the rapid absorption and route of administration vary the toxicity (Jones, 1984). Symptoms of toxicity include preconvulsive movements, followed by convulsions and cardiovascular and respiratory failure.

There are several physical and psychological symptoms of cocaine abuse, many of them identifiable. For example, there is a pattern of pathological use (e.g., inability to reduce or stop use; intoxication throughout the day; episodes of cocaine overdose; Siegel, 1982). There may also be impairment in social or occupational functioning (e.g., loss of job, legal difficulties, economic hardship, and loss of friends).

According to the American Psychiatric Association's (1980) Diagnostic and Statistical Manual of Mental Disorders (DSM-III), Third Edition there are three categories of cocaine abuse classified as a mental disorder: cocaine intoxication, cocaine smoking disorder, and cocaine-induced psychosis.

Although many people believe cocaine is not addicting, there is sufficient evidence to support the existence of both physical and psychological addiction to cocaine. Cravings lead to compulsive and repeated use, despite adverse effects. Withdrawal syndrome is characterized by depression, social withdrawal, irritability, cravings, tremors, muscle pain, eating disturbances,

⁹ Endocarditis is a defect in which the lining of the heart and heart valves become inflamed.

¹⁰ See footnote 4.

electroencephalographic (EEG) changes, decreased energy, and excessive sleeping (Gold, 1987; Jones, 1984). Psychological dependence on cocaine has also been documented (Gold, 1987). Some of the symptoms of potential addiction to be noted are: attempted suicides, headaches, seizures, panic attacks, wide mood swings, sexual impotence, major personality changes, unusual job problems, marital stress, and unexplained financial problems (Gold, 1987). Tolerance of cocaine produces depression, lethargy, cognitive impairment, social withdrawal and lack of sexual desire (Gold, 1984).

V. EFFECTS OF COCAINE USE DURING PREGNANCY

There is a paucity of published research on the effects of cocaine use during pregnancy. Most of this research is conducted by physicians who report their findings in case studies. Usually there is no control group and very little information regarding the patient's drug use history. However, there is sufficient evidence of the effects of cocaine on the mother and her fetus.

Cocaine acts peripherally to inhibit nerve conduction and prevent norepinephrine reuptake at the nerve terminals, producing increased norepinephrine levels with subsequent vasoconstriction, tachycardia and a concomitant acute rise in blood pressure (Ritchie and Greene, 1980). Placental vasoconstriction also occurs (Sherman and Gautieri, 1972), decreasing blood flow to the fetus. An increased frequency of uterine contractions in humans has been reported (Weiner, 1980).

Furthermore, cocaine exposure in utero significantly interferes with an infant's ability to maintain adequate state control in the neonatal period, a factor which places cocaine-exposed infants in a category of high risk similar to infants exposed to narcotics in utero (p. 339). Chasnoff et al. (1986a).

In 1976, the possibility of severe withdrawal syndrome among neonates whose mothers used cocaine was first reported by Blinick et al. (1976). Later studies have shown conflicting findings. For example, in a study of eight infants born to mothers with a history of cocaine abuse, Madden et al. (1986) reported no evidence of symptomatology or signs of teratogenicity,¹¹ even though the urine toxicology screens were all positive. Only one of the eight infants manifested

¹¹ Teratogenicity is the development of physical defects in the embryo.

symptoms of neonatal drug withdrawal which included mild jitteriness and tachypnea.¹² It is generally believed that Madden et al. ignored some of the other symptoms which suggest the infants were affected by maternal cocaine use. Madden et al. did not find "life threatening" symptoms, but the babies did exhibit mild symptomatology. Some of the babies were initially catatonic¹³ and had poor state control.¹⁴

Other fetal effects of maternal cocaine use reported from data collected by Bean in 1986 from Martin Luther King Hospital in Los Angeles (Mondanaro forthcoming, NIDA) include: prematurity, neonatal intoxication and withdrawal, cerebro-vascular accidents, necrotizing enterocolitis,¹⁵ decreased alertness and SIDS. Cocaine-exposed newborns exhibited symptoms of jitteriness, hypertonicity (increased tone), excessive crying, increased appetite, extreme irritability, and/or decreased consolability, alternating periods of lethargy and reduced response to stimulation. Chasnoff et al. reported an increased risk of Sudden Infant Death Syndrome (SIDS) (1986b) and perinatal cerebral infarction¹⁶ (1986c).

In studying the teratogenicity of cocaine in humans, Bingol et al. (1987) compared 50 abusers (Group 1), 110 polydrug abusers (Group 2) and 340 non-substance users (Group 3) among women from two inner-city hospitals in New York City. They found five of the infants in Group 1 had major congenital malformations, as did some of the infants in the other groups, but cardiac and skull defects were present only in Group 1 infants. Withdrawal symptoms (e.g., irritability, crying, vigorous sucking) were also found in 10% of the babies whose mothers had used cocaine only.

¹² Tachypnea is an abnormally rapid rate of breathing.

¹³ A person is catatonic when he/she can not move due to rigid muscles.

¹⁴ Poor state control refers to the presence of inappropriate behavior for a situation. For example, a person goes to sleep when tickled.

¹⁵ Necrotizing enterocolitis is a sudden inflammatory bowel disorder. Symptoms include destruction of the stomach and intestinal lining and poisoning of the intestinal area.

¹⁶ Perinatal cerebral infarction refers to a localized area of decay in the brain, occurring during a period from 28 weeks of pregnancy to 28 days after birth.

There are also preliminary findings from two other studies which suggest that intrauterine exposure to cocaine affects the ophthalmic system. Changes in the eye's blood tissues and abnormal smallness in one eye of an infant whose mother regularly used cocaine were reported by Teske and Trese (1987). Isenberg, Spierer, and Inkells (1987) examined 13 cocaine-intoxicated neonates and found abnormalities in the iris vessels (e.g., vasodilation¹⁷ and tortuosity¹⁸). The authors suggest that the presence of abnormally-dilated or tortuous iris vessels in a neonate should alert the physician to the possibility of cocaine intoxication and the need to obtain a urine test. Confirmation of the diagnosis of cocaine intoxication will help to ensure evaluation of the neonate's environment.

In a matched sample study comparing 70 women who reported using cocaine during pregnancy with 70 women from the general obstetric population at Northwestern Memorial Hospital, MacGregor et al. (1987) found that use of cocaine was associated with lower birth weight and lower gestational age at delivery, an increase in preterm labor and delivery, and delivery of small for gestational age infants. Although the authors recognize the limitations of their small study, they emphasize the significance of adverse effects of cocaine use during pregnancy.

In a study of 53 women (23 on cocaine, or cocaine and heroin, 15 opiate-abusing women, and 15 non-substance abusing women), Chasnoff et al. (1985, 1986a) found a higher rate of spontaneous abortions among those using cocaine. During the third trimester, some of the women experienced abruptio placentae immediately following a self-injection of cocaine. This life threatening complication probably results from the cocaine-induced hypertension and vasoconstriction. Acker et al. (1983) also reported two cases where abruptio placentae was associated with cocaine use.

Abruptio placentae and premature delivery were found among cocaine-addicted women in the study of 237 pregnant women by Finnegan (1987). The cocaine-addicted women were twice as

¹⁷ Vasodilation is a widening of blood vessels.

¹⁸ Tortuosity means twisted or winding.

likely to suffer abruptio placentae than other drug-dependent women and four times more likely than drug-free women. Premature delivery occurred in 21% of the cocaine-addicted women in comparison to 11% of the women taking other drugs and 4% of the drug-free women.

Fifty polydrug users (cocaine and methadone), 50 methadone patients, and 50 drug-free mothers were compared in a study by Ryan, Ehrlich and Finnegan (1987). A higher rate of spontaneous abortion and fetal deaths were found in the cocaine group. In addition, there were significant differences between the cocaine and drug-free groups in infant birth weight, length, head circumference and Apgar scores, the cocaine group being lower for each. Among reasons for these differences may be the general life style of the drug dependent mother, including poor nutrition and hyperactivity. Moreover, there was a greater incidence of deaths from SIDS in the cocaine group.

In a more comprehensive study, Inkeles et al. reviewed the medical records of all pregnant women and neonates suspected of having been exposed to illicit drugs from January 1, 1983 to December 31, 1985 in Los Angeles. Out of 17,751 deliveries, 108 neonates (0.6%) had a positive toxicology screen for cocaine (40%), PCP (21%), opiates (3%), amphetamines (1%), or a combination of other drugs (8%). More importantly, Inkeles et al. (p. 3) reported that "from 1983 to 1985 the known incidence of mothers/newborns exposed to cocaine increased from 0.8 to 4.0 per 1,000 deliveries" (see Figure 2). The most recent statistics from Harbor/UCLA Medical Hospital show even larger increases in the incidence of positive toxicology screens for cocaine. In 1983 there were 0.65 positive toxicology screens for cocaine per 1,000 live births, as compared to 5.08 in 1985, 9.33 in 1986 and 23.10 in 1987 (Yonekura, 1988). The conclusion by Inkeles et al. best summarizes the findings to date on the effects of cocaine use during pregnancy (1987:214a):

These data suggest that cocaine exposure during pregnancy is associated with increased incidence of previous abortions, lack of prenatal care, increased presence of meconium,¹⁹ prematurity, intrauterine growth retardation (IUGR), increased level

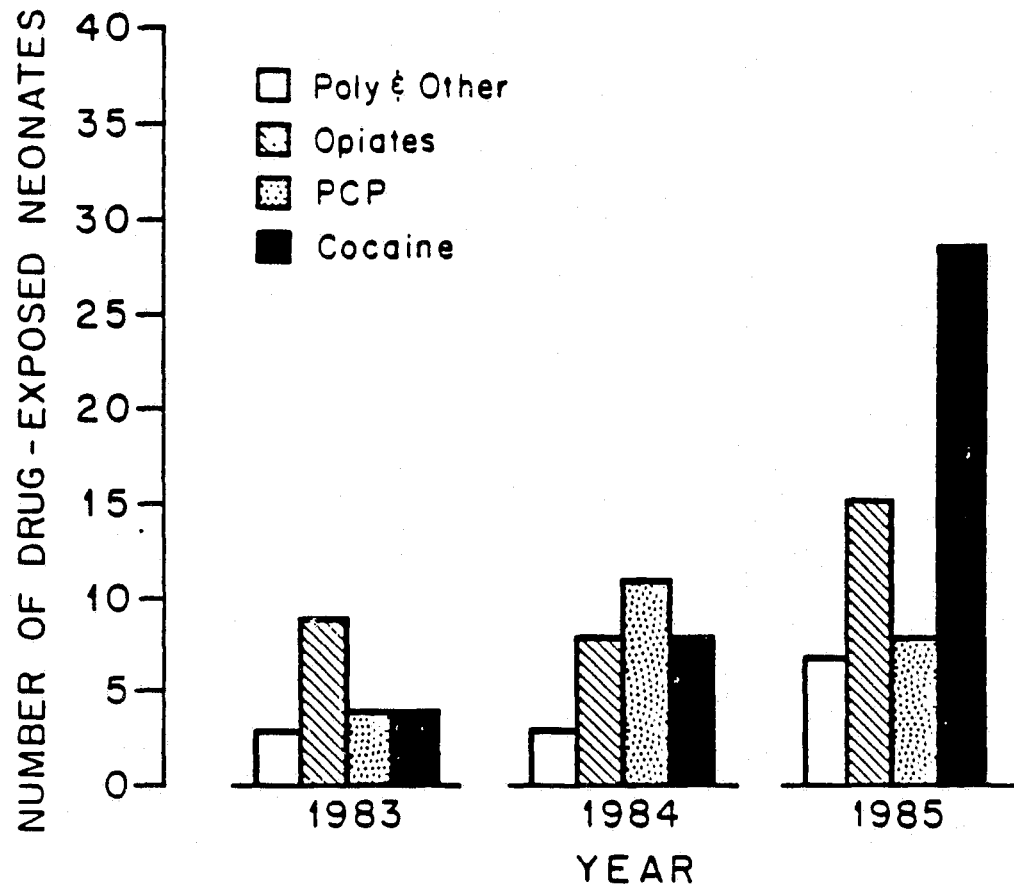
of neonatal care, prolonged neonatal hospital stay, frequent foster care mothers. Additionally, most neonates exposed have significant symptomatology (see Figure 3).

The symptomatology in infants exposed to cocaine intrauterinely is reportedly caused by the sympathomimetic²⁰ action of cocaine (Inkeles et al., forthcoming). Thus, the observed symptoms are similar to those of narcotic withdrawal, but less pronounced. It is hypothesized that infants experience "residual" cocaine intoxication rather than cocaine withdrawal.

The results of one study of the effects of intrauterine exposure to crack, e.g., alkaloidal cocaine, (LeBlanc, Parekh, Naso, & Glass, 1987) are similar to those of earlier research which did not specify the type of cocaine used. Reporting on a clinical study of 38 infants, LeBlanc et al. (1987) state that none of the infants showed evidence of congenital malformation. Nonetheless, neurologic and behavioral abnormalities (e.g., tremulousness, irritability, and muscular rigidity) were observed in less than half of the infants and were of short duration. LeBlanc et al. do caution, however, that the possibility exists of long-term adverse effects.

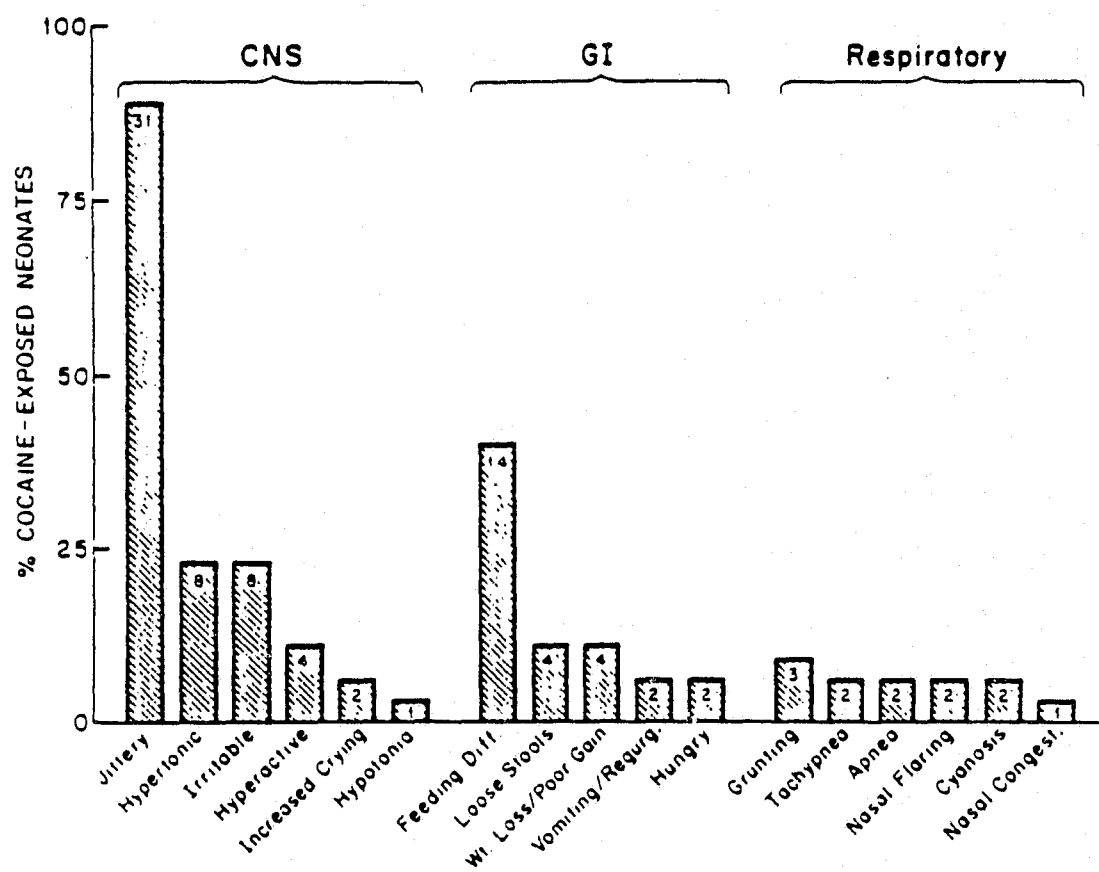
²⁰ A drug which is sympathomimetic causes effects that look like those caused by the sympathetic nervous system.

Figure 2. Neonatal Drug Exposure (1983-1985)



Source: Inkeles et al., unpublished paper

Figure 3. Symptoms of Neonatal Cocaine Exposure



Source: Inkeles et al., unpublished paper

Some of the other major problems of cocaine-exposed neonates, including low birth weight and prematurity, can be partially explained by the lack of prenatal care and maternal malnutrition. Fifty-six percent of the women in the study by Inkells et al. did not receive postnatal medical care. Many substance-abusing women are afraid because identified drug-abusers are routinely reported to Child Protective Services and this would result in loss of custody of their infants after delivery. Finnegan (1988) expresses concern about the ability of mothers addicted to crack to care for their children. Besides medical, psychological and sociological problems, crack-addicted women have little time or ability to provide for their children and are unlikely to seek prenatal and/or postnatal care. There is also a fifteen to twenty fold increase in the probability that the infant will have SIDS. This danger should be pointed out to women using cocaine.

The increase in the number of cocaine-addicted pregnant women admitted to prenatal and neonatal programs throughout the state has led to more medical research. Unfortunately, there is a lack of sociological and social-psychological research in this area. Although some research is ongoing, there needs to be a greater effort to conduct scientific studies with control groups. Moreover, there is a great need for results of such research to reach the public, particularly women of childbearing age.

The problems of cocaine abuse during pregnancy, its effect on neonates, and the need for further scientific study is well summarized by Inkells et al. (forthcoming, p. 21):

By 1985 cocaine had become the most common illicit drug to which neonates delivered at Harbor-UCLA Medical Center are exposed. Cocaine abuse by pregnant women is associated with deleterious effects on pregnancy and the neonate including abruptio placentae, prematurity, and low birth weight. All infants who were cocaine-exposed were symptomatic. Consequently, neonates with the perinatal signs and symptoms described should be screened for exposure to cocaine. These infants usually require a higher level of care and are more likely to be found in intermediate and intensive care nurseries. Early identification of cocaine-abusing pregnant women and appropriate medical and psychological intervention, including good prenatal care and a decrease or elimination of cocaine use, may improve the outcome of their pregnancies. Further prospective studies, including those examining the effectiveness of maternal detoxification are necessary to confirm this hypothesis. Moreover, the long term consequences of intrauterine cocaine exposure remain to be determined.

VI. TREATMENT IMPLICATIONS

There are at least two important needs for treatment of cocaine use in pregnancy:

- (1) counselors in drug treatment programs must be able to recognize the risks of cocaine use during pregnancy; and**
- (2) obstetricians or other health care providers who treat pregnant women, must**
 - (a) learn how to identify pregnant drug users,**
 - (b) know the potential effects of the drug(s) on the course of pregnancy and the fetus, and**
 - (c) be able to advise the patient accordingly.**

Additional considerations involve appropriate pediatric follow-up care for the cocaine-exposed newborn and appropriate social support for the ongoing caregiver of these high-risk infants and children.

The drug treatment program counselors need to be given information on the risks of cocaine use during pregnancy. Specifically, they must warn the client of the increased possibility of abruptio placentae with attendant risks of death for both the woman and fetus. They should also inform the pregnant mother of the possible effects on the newborn baby (e.g., severe withdrawal syndrome, low birth weight, poor state control, congenital malformations and ongoing CNS damage) and on the young child (e.g., developmental retardation).

The American Council on Drug Education has provided a pamphlet for physicians to inform them about pregnancy and drug use and to provide some guidance on how to counsel their patients. They suggest that physicians take a routine drug history of all pregnant women. In addition, a drug screen can be added to the routine urine test and used as a diagnostic when the doctor is suspicious of drug abuse. After counseling, physicians and their staff should continue to play a key role in coordinating the necessary special services for the patient and her infant.

VII. PREVENTION AND INTERVENTION STRATEGIES

One method of preventing drug use during pregnancy is to educate the public. Responsible federal, state, and local agencies can provide impetus for public education by informing all of the drug treatment centers within their constituency. If proper and adequate information is given to

counselors at drug treatment centers, they will be able to advise women of childbearing age about the dangers of drug use during pregnancy.

Prevention programs can also be initiated within the school system. With the high rates of teenage pregnancy, it would be advisable to include the issue of drug abuse during pregnancy in junior high and high school health education programs.

Legal interventions or prevention strategies include: (1) involuntary commitment of pregnant women, (2) court-orders to force maternal surgery for the sake of fetal life-saving, (3) state litigation regarding pregnant women's choice of locations for her delivery, (4) waivers of certain maternal rights, and (5) criminal or civil prosecution of pregnant women whose behavior may be perceived as "child endangerment."

Incentive programs to aid in the identification of substance-abusing pregnant women may increase the possibility of enrollment in prenatal care and/or drug treatment programs. Therapeutic family day-care centers which offer programs for substance-abusing women and their newborns offer a good environment for parent training which provides secondary prevention and intervention with high-risk mothers.

Examples of current intervention programs with cocaine-abusing mothers are the Family Center at Thomas Jefferson University Hospital in Philadelphia, Pa. and the SAM (Substance Abusing Mothers) Clinic at the Harbor/UCLA Medical Center in Los Angeles, Ca. Both of these programs provide prenatal, perinatal, and postnatal services including obstetrical, medical, psychosocial, and addiction-related services. The multidisciplinary team at the SAM Clinic consists of a perinatologist, OB-GYN housestaff, certified nurse midwives, family practice residents, a psychiatry resident, social worker, nutritionist, and nurse educator. Patients are given individual counselling in addition to the group clinic. Inpatient detoxification is available for selected cocaine and opiate addicts. A preliminary evaluation of the SAM clinic, comparing "clinic" and control groups indicates that the clinic provided comprehensive care which resulted in positive consequences, including fewer preterm deliveries, fewer drug-intoxicated and/or low birthweight

babies, and fewer infants needing neonatal intensive care (Yonekura, 1988). Programs such as this are crucial given the increasing number of substance abusing mothers using cocaine.

VIII. CONCLUSION

The current epidemic of cocaine use among young adults (ages 18-34) is especially significant because of the increasing number of pregnant women and women of childbearing age using cocaine. Although there has been limited research on the effects of cocaine use during pregnancy, it is now known that there can be severe consequences. Studies have shown that cocaine use can lead to spontaneous abortions of the fetus, premature births, neonatal cerebrovascular problems, neonatal withdrawal syndrome, and sudden infant death syndrome (SIDS). Unfortunately, too little is known amongst the general public about the dangers of cocaine use during pregnancy, despite campaigns by organizations such as the March of Dimes. The lack of drug treatment facilities and the inadequacy of hospital resources to adequately deal with the rising number of women who use cocaine during pregnancy are foremost concerns.

IX. RESOURCES

SERVICES

Cocaine Hotline	(800) 262-2463 (COCAINE)
Los Angeles Drug Abuse Hotline	(213) 839-1141
Cocaine Anonymous Hotline	(213) 859-2206
L.A. County	(714) 620-4324

SELF HELP GROUPS

Los Angeles County	(818) 447-2887
Orange County	(714) 650-1011
San Fernando Valley	(818) 988-1777

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FILMS

Cocaine Abuse: End of the Line
Audience: High School and Adult

Richard Dreyfuss narrates this film about five people of different ages and walks of life who become hooked on cocaine. Dramatizations by subjects themselves trace the evolution of their addiction. 27 min. Produced and distributed by Aims Media, 6901 Woodley Ave., Van Nuys, CA 91405-4878. (818) 785-4111.

Cocaine Blues
Audience: High School and Adult

This award-winning film examines cocaine's history, effects, and cultural impact. Narrated by Hoyt Axton, it includes interviews with users, narcotics officers, and leading medical experts, plus surveillance footage of a cocaine transaction, and a shootout in an actual cocaine "bust." 30 min. Produced by Barbour Langley & Associates. Distributed by Pyramid Films, Box 1048, Santa Monica, CA 90406. (213) 828-7577.

Cocaine: Beyond the Looking Glass
Audience: High School and Recovered Users

Four former cocaine abusers effectively tell their stories, from dependency to recovery. 30 min. Produced by Dick Young for Hazelden Education Materials. Distributed by Hazelden Education Materials, Film Department, 15425 Pleasant Valley Rd., Center City, MN 55012. (800) 328-0500 (outside Minnesota) or (612) 257-4010 (in Minnesota).

Cocaine Pain
Audience: High School and Adult

Five people discuss their struggle to "kick" cocaine in footage taken at group therapy sessions led by Dr. Richard Miller, founder and director of Cokenders. 32 min. Produced by the Jay Gary Mitchell Film Co. Distributed by Simon & Schuster, 108 Wilmont Rd., Deerfield, IL 60015. (800) 821-7870.

Cocaine-The Highs and Lows
Audience: Adult

A former cocaine addict traces the steps that led to her addiction and discusses her treatment and recovery in a panel format documentary featuring Drs. Mark Gold (of 800-COCAINE) and Conway Hunter. 28 min. Produced by Touchstone Communication Associates. Distributed by FMS Productions, 1777 N. Vine St., Los Angeles, CA 90028. (800) 421-4809.

Hooked on a Line
Audience: High School and Adult

This two-part film looks at the medical symptoms and problems of users, and the effects of use on their lives. Part 1 is "The Disease," Part 2 is "Getting Well." 54 min. Produced and distributed by Palm Beach Institute Foundation, 1014 N. Olive Ave., West Palm Beach, FL 33401. (305) 833-7553.

Snowstorm in the Jungle**Audience: High School and Adult**

Jacques Cousteau and his son Jean Michel captured this dramatic footage while on an 18-month expedition in the Amazon jungle. It depicts the ritual use of coca by Indians, the cultivation of the plant by peasant farmers, and the manufacture of cocaine by traffickers. 47 min. Produced by the Cousteau Society and Turner Broadcasting. Distributed by Turner Broadcasting, 1050 Techwood Drive NW, Atlanta, GA 30318. (404) 827-2200.

The Cocaine Trail**Audience: High School and Adult**

This film follows the cocaine trail from cultivation to importation into the United States. Federal, state, and local officials discuss strategies for controlling the cocaine trade. 25 min. Produced by NBC News. Distributed by Simon & Schuster, 108 Wilmont Rd., Deerfield, IL 60015. (800) 621-7870.

The Physiological Effects of Cocaine**Audience: Professionals**

Pharmacological and chemical dependency counselor Randy Cox describes the physical properties of cocaine, its effects on bodily systems, and common methods of street use. An excellent teaching tool for professionals. 20 min. Produced and distributed by Hazelden Education Materials Department, 15425 Pleasant Valley Rd., Center City, MN 55012. (800) 328-0500 (outside Minnesota) or (612) 257-4010 (in Minnesota).

RESOURCE PERSONS

Council on Perinatal Substance Abuse of Los Angeles County, Inc.
313 North Figueroa Street, MZ-1
Los Angeles, CA 90012
(213) 974-9663

Kathleen West
Dr. Judy Howard
UCLA Project Pride
Rehabilitation Center
Department of Pediatrics
1000 Veteran Avenue
Los Angeles, CA 90024
(213) 825-4821

Project Support
Martin Luther King General Hospital
Dr. Milton Lee
Dr. Xylina Bean
Associate Director Neonatology
12021 Wilmington Avenue
Los Angeles, CA 90059
(213) 603-4650, 4657

Eden Center (daycare program)
Martin Luther King General Hospital
12021 Wilmington Avenue
Los Angeles, CA 90059
(213) 603-4657

Infants and Substance Abusing Mothers Obstetrical Services
Dr. M. Lynn Yonekura
Chief, Division of Obstetrics
Harbor-UCLA Medical Hospital
(213) 533-3565

Harbor-UCLA Medical Hospital
1000 W. Carson Street
Torrance CA 90509
Dr. Stan Inkella
(213) 533-3501

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APPENDIX A

OVERVIEW OF DRUG USE AND PREGNANCY

According to the literature on the problem of drug abuse and pregnancy, some of the general factors of major concern are (Wager and Keith, 1985):

- (1) Inadequate or no prenatal care for pregnant drug users;
- (2) multiple drug (polydrug) use and the effect of successive and simultaneous use;
- (3) variability in patterns and amounts of drug use;
- (4) adulterants in street drugs; and
- (5) lack of information on drug effects among both patients and health care providers.

Among the more common medical complications reported in pregnant women addicted to narcotics are: anemia, vaginitis, hepatitis, and positive serology for AIDS. The obstetric complications for narcotics addicts include: intrauterine growth retardation (IUGR), spontaneous abortion, premature rupture of membranes, precipitous delivery, toxemia, and abruptio placentae. The neonatal complications include: low birth weight, chromosomal and neuromotor abnormalities, depressed Apgar scores²¹ at birth, and drug withdrawal²².

There is very little research on the sociological and/or psychological aspects of drug abuse by pregnant women. Drug addiction during pregnancy is currently considered to be a crime (Rosenbaum, 1979). Consequently, the pregnant addict may encounter social stigma and be treated with disdain by physicians and hospital staff. Nonetheless, there may be some sympathetic physicians or staff who will recognize the dangers to the fetus if the woman attempts to withdraw from drugs without adequate medical supervision and social support. After birth there are other complications, including removal of the baby from the mother's care. This destroys an important process known as infant-mother bonding. Mothers who keep their babies find it difficult to maintain

²¹ An Apgar score is a test to determine a newborn baby's health between 1 and 5 minutes after birth, which is scored on 5 factors, including heart rate, breathing, muscle tone, reflexes, and color. A score from 0 to 3 indicates severe distress, from 4-7 moderate, and from 7 to 10 normal.

²² Finnegan has developed a neonatal assessment scale which is used to measure signs and symptoms of withdrawal. Although originally used only for withdrawal symptoms from heroin, it has also been applied to cocaine.

their drug using habits and to continue mothering. All too often the children are neglected. The mother will feel guilty over the neglect or loss of her child.

The few long term studies of children exposed to drugs in utero have shown that by age 4 or 5 many children are developmentally delayed. Environmental deprivation, early separation, and multiple foster care placements are factors which affect social and psychological development (Weinstein and West, 1986).

Daily Record of Neonatal Withdrawal Signs and Symptoms

Finnegan (1986)

Record presence (+) or absence (-) of symptoms on each shift:

- Irritability*
- Tremulousness*
- Hyperactive moro reflex*
- Sneezing or yawning**
- Increased sucking reflex**
- High pitched cry**
- Poor feeding**
- Fever**
- Diarrhea***
- Spitting up, vomiting***
- Respiratory distress***
- Seizures***

Record VS from day shift:

- Temperature
- Pulse
- Respirations
- Weight

Medications:

- Drug
- Dose
- Frequency
- Urine Toxicology Screen
(first 24 hrs.)

	1	2	3	4	5	6	7
Irritability*							
Tremulousness*							
Hyperactive moro reflex*							
Sneezing or yawning**							
Increased sucking reflex**							
High pitched cry**							
Poor feeding**							
Fever**							
Diarrhea***							
Spitting up, vomiting***							
Respiratory distress***							
Seizures***							
Temperature							
Pulse							
Respirations							
Weight							
Medications:							
Drug							
Dose							
Frequency							
Urine Toxicology Screen (first 24 hrs.)							

*mild withdrawal

**additional symptoms indicating moderate withdrawal

***severe withdrawal