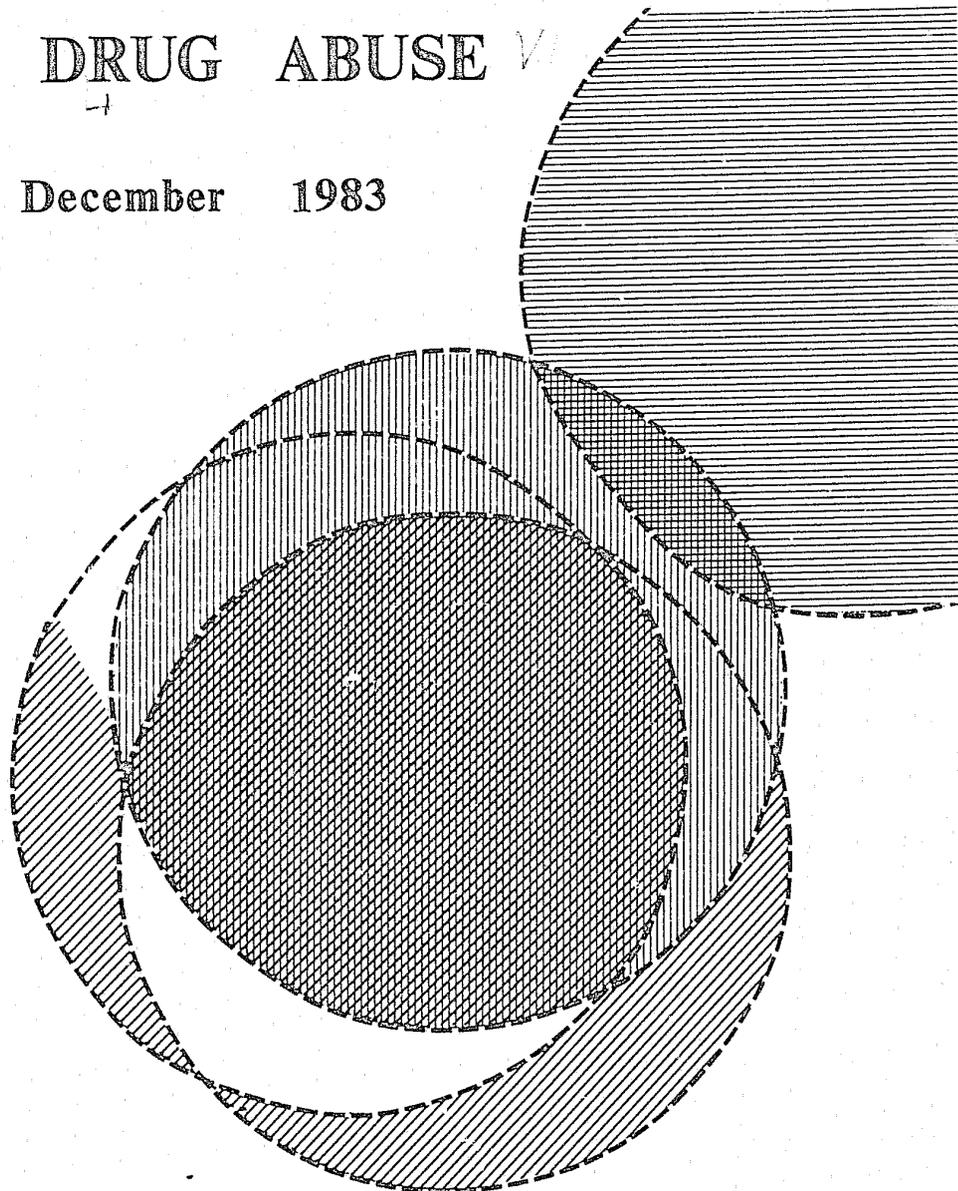


TRENDS, PATTERNS, AND ISSUES IN DRUG ABUSE

December 1983

Community
Epidemiology
Work Group
Proceedings:
Volume I



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Detailed reports of city drug trends appear in Volume II of this publication.

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FOREWORD

The Community Epidemiology Work Group (CEWG) is one of the major resources upon which the National Institute on Drug Abuse (NIDA) depends to acquire timely and accurate information on drug abuse patterns at the local level. The discussions that occur during the biannual meetings and the Proceedings that subsequently are produced afford both the CEWG members as well as researchers in other communities a mechanism for obtaining insight into current trends in drug abuse, for providing information useful in the determination of at risk populations, and for providing an early detection system for identifying the emergence of new drugs of abuse. One particular benefit of these meetings is the fact that the data provided are not biased by the lengthy reporting lag periods that typically occur as data are collected, processed, and analyzed enroute to the national aggregate level.

In addition to providing information on local drug abuse patterns and trends, the CEWG meetings also provide a forum for presentations by experts who provide findings on important research issues in the drug abuse field, such as, for this meeting, cocaine, T's and blues, and drug abuse incidence and prevalence measures and trend indicators.

The CEWG will continue its efforts to monitor drug abuse trends and to refine methodologies for local drug abuse assessment. It is hoped that these Volumes will be useful to researchers, administrators, and policy makers at various levels of government by providing information and suggesting potential methodologies for drug abuse analysis.

Nicholas J. Kozel
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**EXECUTIVE SUMMARY
COMMUNITY EPIDEMIOLOGY WORK GROUP
December 1983**

PRECIS

The fifteenth Community Epidemiology Work Group (CEWG) meeting was held on December 13-16, 1983 in New Orleans, Louisiana. Drug abuse trends and patterns in 18 major metropolitan cities in the United States were discussed for the six month period June 1983-December 1983. Highlights of these discussions include:

- Heroin continues to appear at elevated levels in several cities primarily in the New York-Washington D.C. corridor. Several other cities throughout the nation have experienced recent increases in indicator trends. In particular, many cities have noted an increase in purity and availability of heroin.
- Indicators for "T's and Blues" (Talwin in combination with Pyribenzamine (PBZ)) appear to be suggesting a decrease in the abuse of this combination. It is premature, however, to attribute this decline to the reformulation of Talwin (with the addition of the opiate antagonist-Naloxone). Cities in which Talwin traditionally had been a problem will continue to monitor indicators to determine if the reformulation has affected usage patterns.
- "Other Opiates" appear to be gaining popularity as substitutes for heroin. Most notably, Dilaudid, Demerol, Percodan, codeine, and codeine combinations are showing up as the preferred drugs of narcotic addicts, particularly since the purity of these drugs is thought to be more stable than that of heroin.
- Cocaine continues its high visibility in the drug scene. Of note is its emergence and increasing use among all socio-economic levels of the population. Reports from most cities indicate that cocaine is readily available with increasing purity levels and decreasing prices.
- Stimulants, such as, Ritalin and Preludin, are being used as less expensive alternatives to cocaine in "speedball" combinations. Look-alikes continue to be a problem in some cities and methamphetamine is reported as a growing problem in several West Coast cities.
- The availability of Methaqualone ("ludes") is decreasing on the streets. It is believed that this is due, in part, to the decision by the manufacturer to cease pharmaceutical production of the drug. Counterfeit, i.e., bootleg, ludes are, however, available in a few cities. Consequently, treatment admissions and emergency room mentions for other sedative-hypnotics (e.g., diazepam, Tuinal, Seconal) are beginning to increase.

- ⑥ Five cities report the availability and popularity of LSD. PCP's resurgence in popularity is exhibiting itself in seven cities. The drug is most commonly available as a solution in which cigarettes, particularly "Sherms" (Sherman cigarettes) or marijuana are dipped and smoked, or as a powder which is most commonly sprinkled on marijuana or tobacco and smoked.
- ⑥ Indicators continue to show the wide availability of marijuana throughout the country. In particular, several cities noted its increased emergence as the primary drug of abuse at treatment admission as well as its increased appearance in emergency room mentions.

EXECUTIVE SUMMARY

Drug abuse trends and patterns in 18 major metropolitan cities in the United States were discussed during the fifteenth Community Epidemiology Work Group (CEWG) meeting. This meeting, sponsored by the National Institute on Drug Abuse (NIDA) was held in New Orleans, Louisiana, on December 13-16, 1983. The presentations and discussions focused on major issues affecting the drug abusing population. A significant trend that is currently being monitored is the situation with "T's and Blues" (Talwin and Pyribenzamine (PBZ)). In particular, there is interest in the effect of the recent reformulation of Talwin with the addition of the narcotic antagonist Naloxone. Additional trends that were discussed during the meeting included:

- the appearance of an older population of heroin addicts with use histories of long duration, and a corresponding lack of new initiates into the addict lifestyle,
- the increase in cocaine use as well as other stimulants throughout all socio-economic groups,
- the decrease of methaqualone on the streets, in part believed to be due to the decision of the producer to cease manufacture of the drug,
- the inability, in a growing number of cities, to look at the treatment population as an indication of the drug abuse problem, as reduced funding levels have resulted in major cutbacks for the treatment programs,
- the increasing appearance of alcohol in combination with other drugs among clients in treatment and new admissions, as well as in those individuals who present at emergency rooms.

Volume I of this report contains a summary of drug abuse trends and patterns in each of the cities by substance of abuse, as well as special presentations made during the meeting. Volume II contains copies of the complete city reports.

HEROIN

Several cities report a continuation of elevated levels of heroin activity while others have experienced recent increases in indicator trends:

In **New York**, indicators continue to show heroin activity at an exceedingly high level. Deaths due to narcotism continued at their highest peak since the mid-1970's (based on imputed data there were 150 deaths reported for the third quarter of 1983) and AIDS deaths involving decedents with a history of narcotism account for an additional 56 deaths in the first ten months of 1983. Serum hepatitis cases increased 18 percent between the first nine months of 1982 and 1983 (from 758 to 896). ER episodes remain at a generally high level of activity. In addition, heroin/cocaine arrests, purity of heroin exhibits, and admissions to prison detoxification units show increasing trends. Although the admission data for those reporting heroin as the primary drug of abuse show recent declines, treatment utilization rates remain close to capacity. Reports from **New York's Street Studies**

Unit continue to indicate the ready availability of good quality heroin throughout the city—at the end of 1982 the interquartile range was 3 to 15 percent; by the middle of 1983, this range was between 2 and 17 percent.

Buffalo notes that indicators for emergency room mentions for heroin have increased recently. The heroin that is being seen on the streets of that city has a reported purity level of 3.5 percent.

Phoenix has experienced a sudden and dramatic increase in heroin activity. The indicators for January-June, 1983, for example, indicate that emergency room mentions for heroin use more than doubled, accounting for 38 percent of total admissions. "Tootsie roll" heroin is still prominent and available for \$500-\$600 per gram. With a purity of 60 percent to 90 percent, many users that had been accustomed to standard Mexican brown heroin, with a reported purity of 3 percent to 5 percent, are overdosing. During this reporting period, for instance, five heroin-related deaths were reported as compared with the three reported for 1982.

Since 1981, **San Diego** has noted a consistent and steady increase in heroin-related emergency room mentions, a 14 percent increase in heroin-related deaths, and a significant increase in serum hepatitis cases. Recently, the purity of the heroin being seen in **San Diego** has increased to an average of approximately 10.5 percent, while the price has decreased. Local officials have observed the stockpiling of heroin directly over the border in Tijuana. With a purity in the range of 13 percent to 18 percent, this substance has a wholesale price of \$8,500 per ounce.

In **Los Angeles**, ER episodes and overdose deaths involving heroin continue to rise. Most notably, there was a dramatic increase in heroin overdose deaths among hispanics. There was also a sharp upswing in overdose deaths for heroin in combination with other drugs in that city.

Although the indicators in **San Francisco** present a mixed picture with regard to heroin use, it may be safe to conclude that the prevalence of heroin abuse held steady or increased slightly during CY'83. The DAWN data on ER mentions for heroin/morphine have trended upwards while treatment program admissions have been dominated by heroin. Heroin was the primary drug of abuse for about 78 percent of all persons admitted to treatment in mid-1983. Staff at treatment programs have noticed that an unusually large proportion of young, middle class whites are using heroin and that more people are smoking heroin than in the past. Heroin is widely available in **San Francisco** and observers note that the quality is better than a year or two ago.

In **Denver**, the low but increasing purity levels (currently at 6 percent) may be responsible for the reported switch to other opiates. However, all indicators point to increases in both heroin and other opiate abuse. During the period July-September, 1983, treatment admissions for heroin and other opiates increased from 11.6 percent and 9.5 percent to 14.8 percent and 10.4 percent, respectively (the largest increase since 1980), emergency room mentions were the highest since 1978, and hepatitis B cases increased. In addition, program directors in the city report a dramatic increase in clients entering treatment for methadone maintenance.

St. Louis reports an increase in the availability of heroin and, although treatment admissions had dropped continuously between 1977 and 1982, the first two quarters of 1983 show an increase in admissions at rates exceeding those of the previous four years. Police cases reported by the City of St. Louis Police Laboratory are also ahead of the 1982 levels.

In **Detroit**, heroin is the major drug involved in arrests which result in processing to court. Emergency room mentions increased sharply from the 397 reported for 1982 to 684 for 1983, and heroin as primary drug of abuse accounts for 24 percent of all treatment admissions. The wide range in purity for heroin in **Detroit** may be responsible for the high overdose death rate in that city.

The availability of heroin in **New Orleans** has increased and stabilized at high levels. With a purity of 15 to 20 percent, the price has increased slightly from \$100 to \$125 for a two spoon bag.

Despite the reduction in heroin activity in **Washington, D.C.**, as evidenced by decreases in emergency room episodes, treatment admissions, and overdose deaths, heroin has remained the #1 drug of abuse accounting for over 80 percent of all treatment admissions. The heroin that is appearing in the District has a purity level of 4 percent and a price of \$2.53 per milligram.

PENTAZOCINE (TALWIN)

In January 1983, the Winthrop Pharmaceutical Company removed Talwin from the licit drug market in the United States and replaced it with a reformulation that contains Talwin and the opiate antagonist, Naloxone. Most cities in which "T's and Blues" (Talwin in combination with Pyribenzamine (PBZ)) had previously been a problem now report a decline in indicators for this combination, but it may be premature at this point to attribute this decline solely to the reformulation.

Although the indicators are decreasing, Talwin still remains the most serious drug of abuse according to the inpatient admission data in **Buffalo**--particularly since Talwin without the antagonist is coming into the city from across the border in Canada. **Detroit's** reported decrease in emergency room mentions and drug seizures is attributed to the decreased supply, availability, and popularity of Talwin. In addition, the perception of users as "low life" or "low status" may also be contributing to the decrease in use. Thus, according to all indicators, Talwin is no longer being reported as a top ranking drug of choice in that city nor in **Chicago**, which reports a decline in the availability and prevalence of use. A decline in Talwin's use also is evident in **Phoenix** which reported a decrease in treatment admissions. Indicators in **New Orleans** appear to be showing that "T's and Blues" are slowly vanishing from the drug scene as "sets" are becoming less available and prices are increasing--originally \$12 per set, the price has increased to \$15 per set. This increased pricing also was reported in **St. Louis**. The new formulation (with Naloxone) sells for \$10 per set there, while the old formulation (without Naloxone) sells for \$20 to \$22 per set. Consequently, it has become more expensive to use "T's and Blues" than heroin. Traditionally its biggest inner-city drug problem, indicators for the use of "T's and Blues" are declining in **St. Louis**--arrests decreased from 164 in the first quarter of 1983 to 48 in the third quarter;

treatment admissions dropped from 127 in the first quarter to 47 in the third; and emergency room mentions declined from 27 in the first quarter to 17 in the third. **St. Louis** attributes this decline to:

- o the decreased supply of Talwin tablets which caused an increase in the price of the sets,
- o the unacceptability of Talwin Nx tablets as a substitute for Talwin,
- o the increased availability of high quality heroin.

In **Philadelphia**, the combinations of Talwin and Benadryl (soup) ; Talwin, Benadryl, and Ritalin (soup and sandwich); and Ritalin and Talwin (rits and T's) still remain popular.

All cities in which a "T's and Blues" problem had existed are being attentive to monitoring current trends to determine if the reformulation, indeed, will lead to a continuing decline in Talwin abuse.

OPIATES (OTHER THAN HEROIN AND TALWIN)

In **Minneapolis** and **Chicago**, Dilaudid is the preferred drug of narcotic addicts. The price for a four milligram tablet of Dilaudid in **Minneapolis** varies between \$40 and \$55, while in **Chicago**, Dilaudid sells for \$30 to \$40 per pill and in the **St. Louis** metropolitan area, a four milligram tablet sells for \$40 to \$50, or \$20 to \$25 for two milligrams. **New Orleans** reports the ready availability of Dilaudid and Demerol which are being used as substitutes for heroin. The street price for Dilaudid in that city is \$30 to \$60 per tab, while Demerol is priced between \$25 and \$45 per tab. The abuse of Demerol is also occurring in **New York** where reports indicate an increase in ER mentions. In **Detroit**, ER mentions for Dilaudid have increased, while treatment admissions decreased by 5 percent. Reports for **New Orleans** indicate that Dilaudid is the most popular other opiate drug and in **St. Louis**, a large number of primary Dilaudid users recently have entered treatment programs.

An increase in other opiate use also occurred in **Washington, D.C.** evidenced by the simultaneous increase in Dilaudid mentions and decrease in heroin mentions. In 1983, reports from **Denver** indicate that the largest increase in treatment admissions since 1980 was for opiates other than heroin. Users in that city believe the purity of the other opiate drugs is more stable than that of heroin.

Codeine continues to remain popular in **Chicago**, **Los Angeles**, and **Minneapolis**. **Los Angeles** reports, however, that ER mentions for codeine dropped from 172 in 1982 to 136 in 1983, as did mentions for overdose deaths—from 95 in 1981 to 57 in 1983 (a 40 percent decrease). Seizures of these substances, on the other hand, have increased. **Detroit** reports increases in arrests for codeine which is a very popular drug that is widely available in Empirin and Tylenol compounds.

Indicators in **Miami** suggest that Percodan, Dilaudid, Demerol, and Darvon are on the rise, with their increases due, somewhat, to their usage as heroin supplemental/substitute drugs. Reports in **Detroit** show an increased demand for Percodan in that city. Percodan ranks above heroin in ER mentions in **Miami**, while in **Boston**, Percodan is the leading drug stolen in prescription drug thefts with tabs selling for \$5 to \$10 on the streets.

In **Los Angeles**, as in **San Diego**, the combination which is most preferred is codeine and glutethimide, called "Fours and Doors" or "Loads." **Newark** reports that among those using other opiates, 60 percent use "hits" (the name of the codeine and glutethimide combination in North Jersey) at \$12 per combination.

Chicago reports a decrease in the abuse of "syrup and beans," i.e., Tussionex cough syrup and Doriden or Valium. **Detroit**, on the other hand, noted increases in the popularity of Tussionex cough syrup at \$10 per bottle as well as an over-the-counter painkiller "222" which is brought across the border from Canada. Reports from **Boston** indicate a problem with diverted methadone which originates at a treatment program that provides take home medication. Subsequently, this methadone is selling on the streets for \$100 to \$150 per dose.

COCAINE

The most notable observation regarding the use of cocaine is its emergence and its increasing use among all socio-economic levels of the population. Once considered an "upper class" drug, cocaine use has crossed "social class lines" and is now becoming popular among all segments of society.

In FY'83, the Medical Examiner's Office in **San Francisco** reported that 12 deaths could be directly attributed to cocaine. Although cocaine related ER episodes dropped 15 percent during the first three quarters of 1983, and very recent data from the Haight-Ashbury Free Medical Clinic indicated a sharp drop in the rate of admissions for cocaine problems, observers concur that cocaine use, nonetheless, continues to be highly prevalent and that there are large amounts of good quality cocaine available. The mean quoted price for Northern Californian samples was under \$109 for grams and \$1,920 for ounces. Despite the apparent levelling off of use during 1983, there has been widespread and increasing prevalence of the more intensive usages of cocaine, particularly freebasing, injection, and a tendency to use the drug in a polydrug context. In **Los Angeles**, the upsurge in cocaine indicators is dramatic—emergency room mentions continued to rise, police seizures almost doubled, and cocaine related overdose deaths increased by almost 50 percent between 1981 and 1983. **San Diego** reports an increase in treatment admissions for cocaine to 26 percent of total admissions between 1982 and 1983, but ER mentions have shown a definite downward trend. Cocaine remains plentiful in that city, with a purity of 50 percent or higher from wholesale sources. Indicators of cocaine use in **Phoenix** show a continuation of increasing treatment admissions and a slight increase in emergency room mentions. Within the last three to four months, reports have indicated a slight drop in the price of cocaine to between \$1,800 and \$2,800 per ounce with an increased purity (in wholesale quantity buys) of 60 percent to 90 percent. **Dallas**, too, reports an increase in admissions to treatment as well as an increase in the total number of arrests for possession, sale, or manufacture of cocaine. Similar to **Phoenix**, emergency room mentions in **Dallas** have not shown a significant change.

Chicago reports cocaine as the only drug which shows a definite pattern of increasing use with indications of a significant increase in purity. Indicators in **Detroit** show an increase in arrests, a 51 percent increase in treatment admissions for primary cocaine use (between 1982 and 1983), and an increase in emergency room mentions. Both **St. Louis** and **Minneapolis** note an increase in users who are "speedballing" the drug, i.e., combining heroin and cocaine. **St. Louis** also reports that the use of cocaine is increasing primarily among intravenous addicts in that city, where the drug is available for \$60 to \$100 per gram. Police cases show steady increases, from 90 in 1981 to 120 in 1982, while treatment admissions for primary cocaine use rose dramatically from 35 during all of 1982 to 35 during the first six months of 1983. In **Minneapolis**, although treatment admissions appear to be declining, an upward trend in ER mentions was noted for cocaine. Purity at the gram level is estimated to be in the 22 percent to 25 percent range with ounce and gram prices at \$2,000 to \$2,200 and \$110, respectively.

The **Denver** police department reports that the major drug abused on the streets of that city is cocaine. Cocaine continues to be available and in demand in **New Orleans** with a purity of 92 percent and selling for \$2,400, or a purity of 82 percent and selling for \$1,900. In **Miami**, cocaine is the leading drug of those entering drug free treatment. There has been no change in the upward movement for cocaine use in that city--ER mentions were up 23 percent and among those entering treatment, 50 percent reported cocaine as their primary drug of abuse.

In **Boston**, the best quality cocaine, called "rock," is the first choice of the free-basers. The use of cocaine in that city appears to have stabilized at elevated levels. In **Buffalo**, high quality cocaine is called "rock crystal" and sells for \$190 per gram. **Philadelphia** reports a decrease in cocaine related offenses and arrests, while the ER data show an increase and admissions to treatment for primary cocaine use increased 29 percent between FY'82 and FY'83.

In both **Newark** and **New York** cocaine use has increased, particularly when reported as the primary drug of abuse at admission. For example, primary cocaine use accounts for approximately 30 percent of all admissions to treatment in **Newark**. In **New York** where recent reports indicate that a glut of cocaine is available, the median purity is reported to be 40 percent with a kilogram selling for \$26,000. **Washington, D.C.** reports a significant increase of 33.3 percent in emergency room mentions for cocaine and a 20 percent increase in treatment admissions.

STIMULANTS

Indicators in **Chicago** suggest that the use of Ritalin as a less expensive alternative to cocaine in "speedball" combinations is increasing. One tab, which sells for as low as \$3, is equivalent to a \$10 bag of cocaine. Preludin, however, with a price of between \$12 and \$15 a piece, is preferred among the Northside, primarily white intravenous drug users. The most common stimulant drugs being used in **Chicago**, however, continue to be the look-alikes which are particularly popular among high school students. Reports from **New Orleans** also indicate the availability of large amounts of look-alike drugs. Although their popularity may be declining in **Minneapolis**, look-alikes continue to appear in the seizure data. Law enforcement seizures for that city show the availability of an abundance of stimulants on the streets including Ritalin, black beauties, methamphetamine, Dexamyl, and a host of others. The use of amphetamine among 8th, 10th and 12th

graders ranks only behind alcohol and marijuana in popularity. Treatment admissions, however, appear to be declining. In **St. Louis**, Preludin is popular as an alternative to cocaine in "speedball" combinations and, in **New Orleans**, Preludin is reported to be a popular heroin substitute at \$15 to \$25 per tab.

In **Dallas**, amphetamines accounted for 32 percent of total admissions to treatment during the first nine months of 1983, while in **San Francisco**, treatment admissions for primary amphetamine abuse increased by 46 percent from 187 in 1981 to 273 in 1983. Methamphetamine has a longer duration action than cocaine and delivers the user about three to four times the "bang for the buck." In **San Francisco**, the abuse of this substance appears to be most prevalent among gay males with a growing number of them injecting it. In addition, methamphetamine in **San Francisco** has improved in quality, while the price has declined substantially. In FY'83, methamphetamine was discovered in 19 decedents—an increase of 137 percent from FY'82. Reports from **San Diego** also indicate a growing problem with methamphetamine—admissions have increased by 18 percent which is the largest increase since July 1982. In **Phoenix** although amphetamine and methamphetamine thefts from pharmacies have decreased, treatment admissions for these substances nearly doubled. **Philadelphia** reports a 5 to 6 percent increase in total admissions for amphetamine abuse. Indicators for that city show that the largest number of these admissions were in the 1955-59 birth cohort.

Both **Denver** and **New York** report a decrease in amphetamine use. **Denver** noted that its greatest decrease in abused drugs occurred in this category (down by 2.2 percent) while in **New York**, emergency room episodes for amphetamines showed a drastic decline.

SEDATIVE-HYPNOTICS

In **San Francisco**, ER mentions for methaqualone ("ludes") fell 31 percent between CY'82 and the first nine months of 1983. In recent months, however, staff at treatment clinics believe that methaqualone abuse increased somewhat and that this problem is concentrated among Asians (especially Chinese youth) and gay males. The mean quoted price for a methaqualone tablet in **San Francisco** was \$4.50. Admission for Valium abuse appears to have risen by 50 percent between FY'81 and FY'83 in **San Francisco**. On the other hand, **Los Angeles** reports that ER mentions for both Valium and barbiturates decreased approximately 31 percent.

A decline in the appearance of methaqualone in emergency rooms was noted in both **Dallas** and **Miami**. Consequently, diazepam has become the drug most often cited in ER episodes in **Dallas**. Ludes, however, continue to be the #1 drug mentioned in ERs in **Miami**. Treatment data in that city, however, indicate a decreasing problem with methaqualone. It appears that methaqualone episodes there are being replaced by Seconal and Tuinal mentions which have increased by 73 percent and 34 percent, respectively. **Phoenix** notes an increase in treatment admissions for barbiturates and tranquilizers. The primary drugs that are being stolen from pharmacies in that city are reported to be diazepam and phenobarbital; phenobarbital thefts more than doubled from the second half of 1982 to the first half of 1983. **Detroit** reported a decrease in ER mentions for both diazepam and methaqualone, however, seizures of methaqualone increased. Both **Newark** and **New Orleans** report that their markets are flooded with counterfeit ludes. Methaqualone tabs are available in **New Orleans** for \$3 to \$5 a piece.

In **Chicago**, depressants are more often taken as a part of a drug repertoire than as a primary drug of abuse. In particular, Valium, at \$.50 for a five milligram pill, is the preferred depressant taken with a narcotic. **Minneapolis** reports the use of barbiturates to potentiate the effects of both alcohol and low quality heroin. Ludes, primarily bootleg, have been irregularly available at \$5 to \$8 a piece. In **Philadelphia**, ER mentions for diazepam increased as did admissions for barbiturates. Conversely, **New York** reports ER episodes involving diazepam, Tuinal, Seconal, and methaqualone are showing dramatic decreases.

HALLUCINOGENS

Chicago, **New York**, and **Boston** all report the continued availability of LSD. In particular, **Boston** reports the availability of significant amounts of blotter and microdot acid. Selling for \$2.50 to \$5.00 per hit, LSD is popular among teenage drug users in **Chicago**. Another hallucinogen, MDA, has gained popularity among young drug using groups on the Northside. Traditionally, MDA had been used by gay populations in that city.

Indicators in **Newark** note the resurgence of LSD among young black males at \$5 to \$10 per pill and a variety of LSD remains readily available in the **Minneapolis** area selling for \$4 to \$5 per hit. The various types available include orange microdot, windowpane, and several blotter designs. Its popularity as a primary drug of abuse, however, seems to have dropped off significantly.

Since 1980, **St. Louis** has experienced a doubling of treatment admissions for phencyclidine (PCP). This resurgence in PCP's popularity is exhibiting itself primarily among high school youth and even younger children. The drug is commonly available as a solution in which cigarettes or marijuana joints are dipped. PCP on cannabis is known in **St. Louis** as "Wack." In **Washington, D.C.**, the combination of PCP and marijuana is known as "Lovely." D.C. has experienced a 53 percent increase in mentions for PCP—from the 317 in 1982 to a projected 485 in 1983. In addition, treatment programs in the District report a 30 percent increase in clients reporting PCP abuse since last year.

Although not a significant problem, as yet, "Angel Dust" (most commonly, PCP powder sprinkled on cigarettes or marijuana joints) is turning up in **Boston**, **Philadelphia**, **New York** (particularly Queens), and **Los Angeles** all report increased emergency room mentions for PCP. **New York** reports that 2 percent of all treatment admissions were for primary drug PCP. In **Los Angeles** PCP abuse remains the #1 problem. Between 1982 and 1983, a further increase in the number of patients presenting emergency medical complications from the effect of PCP was noted—mentions increased 7.7 percent, with incidents for blacks and hispanics showing a consistent upsurge. The overdose death data for **Los Angeles** also reflect an upward trend in mentions for PCP. In **Chicago**, reports indicate greater availability of PCP and a larger number of individuals using the substance. On the Southside, blacks refer to PCP as "Tae" and smoke it in "Sherms" (Sherman cigarettes) available for \$30 a piece. Although drug use indicators in **San Diego** do not show a marked increase in the use of PCP, community sources in that city are beginning to report an increase in the use of this substance, which sells for \$6 to \$10 per dose.

In **San Francisco**, PCP use is largely confined to the latino community. Indicators for that city seem to show a reverse from a previously declining trend with reports of admissions to treatment programs increasing for 1983. **Phoenix**, on the other hand, reports a decrease in treatment admissions, and **Minneapolis** notes a diminishing number of new initiates.

MARIJUANA

Minneapolis reports marijuana as the most widely used mood-altering substance in the state, with its continued dominance of the drug seizure reports. With 30 percent of all treatment admissions, indicators in **Denver** show marijuana as the single most reported drug of abuse and in **Buffalo's** outpatient clinics, marijuana has been identified as the #1 drug at admission. Police labs in **New York** also rank marijuana as the most abused drug. Both **Dallas** and **Phoenix** report an increase in treatment admissions for marijuana. In **Phoenix**, admissions for marijuana more than doubled, accounting for 19 percent of total admissions and, during the last six months, ER mentions increased as well.

Boston reports the presence of "sea hashish" in their drug scene, which has turned up in the nets of area fisherman. This substance, best known by its rank odor, is called "Salt Water Taffy" on the streets and sells for \$50 per ounce or \$300 to \$350 per one-half pound.

In **Miami**, marijuana mentions rank third in ER episodes, and are usually for marijuana in combination with another drug. Higher THC content is being reported, especially in domestic sinsemilla. Emergency room mentions for marijuana have increased in **Detroit** as well as in **Los Angeles** where reports indicate an increase of 177.4 percent.

Marijuana continues to be the most readily available drug in **New Orleans**, particularly as domestic cultivation is significantly expanding. Marijuana is selling for \$400 to \$500 per pound in that city and continues to be the drug most commonly seized. A marijuana drought began in July in **Chicago**, consequently lower potency "Mexican" selling for \$50 per lid has found a market, as have single joints of high grade selling for as much as \$3 a piece. Sinsemilla is also available, but much more expensive.

COMPLICATIONS OF PENTAZOCINE AND TRIPELENNAMINE ABUSE

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Pentazocine was released for general medical use in 1967 as a narcotic analgesic with little potential for abuse (1). Pharmacologically, pentazocine has a mixed agonist-antagonist action which was originally thought to preclude a high level of abuse. Despite the theoretical low abuse potential, reports began to appear in the literature as early as 1969 (2) describing abuse of the drug. Since the first report of pentazocine abuse, numerous accounts have appeared in the literature substantiating its abuse potential (3-10). Early abuse of pentazocine was most often by intramuscular injection, resulting in skin ulcerations and the development of "woody-hard" texture to the skin (7, 11, 12).

Abuse of tripeleennamine as a substitute for narcotics was first reported in 1967 (13); however, it had been previously described as useful in the treatment of morphine withdrawal (14). Since the late 1930s, tripeleennamine has been used in conjunction with paregoric, heroin, and morphine as intravenous street drug preparations all known as "blue velvet." Abuse of blue velvet has been known for some time to result in pulmonary complications for users because of the magnesium silicate (talc) in the tripeleennamine tablet (15, 16).

In 1977, Fedders (17) described the phenomenon of injecting the combination of pentazocine and tripeleennamine together. Additional reports have subsequently been published describing the use of this drug combination as a substitute for heroin on the street (18-21). Pentazocine has also been used in combination with other drugs (21): pentazocine and diphenhydramine (Soup); pentazocine and diazepam (also called T's and blues); and pentazocine and methylphenidate (Tea and crackers) are not uncommon combinations.

The abuse of pentazocine either alone or in combination with other drugs has resulted in numerous reports of medical complications. As would be expected, when an oral preparation containing an insoluble excipient is injected intravenously, pulmonary complications occur from particulate matter being trapped in the small vessels of the lungs (22-24). If the particulate material bypasses the lungs, central nervous system damage may occur. Caplan et al. (25) described thirteen patients with neurologic complications of T's and blues abuse. Six of the patients presented with seizures either from emboli or direct toxic effects of the drugs and three had strokes. Three of the patients suffered from infections secondary to unsterile injection techniques, and one had hepatic encephalopathy.

In addition to the effects of pentazocine on adults, use during pregnancy may effect the fetus. The earliest reports of pentazocine's effects on pregnancy and the neonate involved the use of pentazocine as an analgesic during pregnancy (26-29). Reports of neonatal withdrawal due to the chronic use of pentazocine appeared in the medical literature in the mid 1970s (30-34). The mothers were usually prescribed pentazocine by their physicians for relief of pain. Neonatal

withdrawal consisted of jitteriness, hypertonicity, hyperactivity, opisthonic posturing, diarrhea, vomiting, yawning, and sneezing, usually beginning within 24 hours after delivery. Finnegan and Wapner (35) reported increased maternal and infant morbidity when pentazocine, as compared to methadone, was used by street addicts during pregnancy.

The studies cited, except for Finnegan and Wapner, describe the effects of pentazocine alone or in combination but fail to compare these effects to other drugs of abuse. It is well known that intravenous (IV) heroin abuse is associated with a wide range of medical complications (35, 36). Acute respiratory problems such as respiratory depression or pulmonary edema may be quite severe, but chronic respiratory abnormalities tend to be minor. Several groups have reported the presence of respiratory symptoms and gas exchange abnormalities among chronic IV heroin abusers. In general, these abnormalities have occurred after years of abuse (37, 38) or after shorter periods of IV usage of nonparenteral preparations in addition to heroin (16, 40). These and other reports (41, 42) suggest that the IV abuse of preparations intended for nonparenteral use may represent a far greater hazard for the respiratory system than does heroin. However, little data are available to define the magnitude of the risk associated with such abuse. We have evaluated the symptoms, duration of drug use, pulmonary function and response to exercise in T's and blues, heroin and miscellaneous (non-T's and blues, non-heroin) IV drug abusers (43). On the basis of our results, we believe IV T's and blues abuse, and probably most IV use of nonparenteral preparations, represents a particularly serious threat to the respiratory system, producing a high incidence of clinically significant respiratory abnormalities which appear after relatively brief periods of time.

The effects on the fetus were also studied. To determine the effects of maternal T's and blues use on the fetus and neonate, infants delivered to women taking this combination of drugs during pregnancy were compared with infants delivered by women on low-dose methadone maintenance and with infants delivered by a group of drug-free women (44).

Pulmonary Function Study

Patient Selection. The study population consisted of 45 consecutive IV drug abusers admitted to Northwestern Memorial Hospital's Inpatient Chemical Dependence Program between January 1981 and July 1982 for treatment of their drug abuse; none were referred for respiratory symptoms. Of this group, 20 were T's and blues abusers and 25 were non-T's and blues abusers including 19 who used heroin and six who abused a variety of other drugs, i.e., cocaine and amphetamines.

Each subject had a routine history, drug abuse history, and physical examination taken on admission. Admission laboratory tests included a complete blood count, electrocardiogram, and PA and lateral chest roentgenograms. Chest X-ray films were interpreted by staff radiologists who were not aware of the ongoing study. Each subject was then studied in the pulmonary function laboratory where a standardized respiratory questionnaire was administered. Included in the respiratory questionnaire were detailed questions about respiratory symptoms, previous respiratory diagnoses and cigarette use. Detailed studies of pulmonary function

including total lung capacity (TLC), rates of air flow (FEV, FEF75-25) and diffusing capacity (DLCO), a test of the lungs ability to exchange gas, were performed. Four T's and blues abusers and four heroin abusers with a diffusing capacity of less than 70 percent of predicted underwent incremental, submaximal exercise testing on a treadmill. Analysis of the data was done by Chi-square and students T test where appropriate. The majority of the subjects were male (Table 1)—70 percent (14/20) of the T's and blues subjects and 78 percent (19/25) of non-T's and blues abusers. More of the T's and blues abusers were black, probably reflecting the fact that T's and blues abuse is generally a habit of inner city urban populations. The mean age of the T's and blues (28.5 years) and non-T's and blues (28.0 years) groups and their smoking habits were similar. However, the duration of abuse for the T's and blues group was found to be significantly shorter than the duration of abuse for the heroin group. The mean duration of T's and blues use was 2.7 years compared to 7.6 years for heroin abusers and only 1.5 years for miscellaneous drug abusers.

Results of pulmonary function tests are shown in Table 2. Although the flow of air during expiration, as indicated by the FEV_1/FVC ratio and FEF75-25 are greater in the T's and blues than the heroin group, neither of these differences attained statistical significance. However, values for TLC, a measure of lung volume, and DLCO were significantly lower in T's and blues abusers than in the other groups. Furthermore, the reduction in DLCO among T's and blues abusers was out of proportion to the reduction in TLC, providing additional evidence for an impairment of gas exchange capability. Eighty percent of the T's and blues abusers had a diffusing capacity less than 70 percent of predicted as compared to only 47 percent of heroin abusers and 17 percent of the miscellaneous drug users. The mean duration of T's and blues use in these subjects was only 2.6 years as compared to seven years for heroin abusers in whom the diffusing capacity was less than 70 percent.

Important and significantly different responses to our respiratory symptom questionnaire were noted between the three groups. These results are summarized in Figure 1. The T's and blues group was at least twice as likely as the other two groups to be symptomatic. Seventy-five percent of the T's and blues abusers had some complaint referable to the respiratory system as compared to 36 percent of the heroin abusers and 33 percent of the miscellaneous drug users. The most common symptom noted by T's and blues users was cough (65 percent of subjects), followed in frequency by sputum production (50 percent) and shortness of breath either at rest or exercise (45 percent). These symptomatic subjects, as well as all other participants, had normal physical examinations, chest X-ray films, electrocardiograms, and complete blood counts.

Eight of the 25 subjects with a diffusing capacity of less than 70 percent of predicted underwent exercise testing. There were four T's and blues and four heroin abusers. These individuals were selected for exercise study because of their willingness to participate. However, their symptoms and pulmonary function test results were not significantly different from the other subjects with reduced DLCO values who were not studied during exercise. Results of these exercise studies are shown in Table 3. Both groups had similar resting mean DLCO. The duration of abuse for these T's and blues users was consistent with that of the overall T's and blues group and was not significantly shorter than for the heroin abusers undergoing exercise. Both groups exercised vigorously as indicated by the percent of maximum predicted heart rate attained. Although maximum oxygen

consumption ($\text{VO}_2 \text{ max}$) was also similar for both groups (1.8 L/min and 2.2 L/min for T's and blues and heroin groups, respectively), when $\text{VO}_2 \text{ max}$ was adjusted for the size and age of the exercising subjects, the T's and blues users achieved a significantly lower proportion of their predicted $\text{VO}_2 \text{ max}$. Response to exercise among the T's and blues group was distinctly abnormal in other ways as well. The arterial oxygen tension decreased and the proportion of dead space ventilated (V_D/V_T), a measure of breathing efficiency, increased between rest and exercise. Heroin users, in contrast, responded appropriately to exercise. Although their mean maximal alveolar-arterial oxygen ($A-a \text{ O}_2$), another indicator of respiratory efficiency, was slightly increased, it was significantly lower than among the T's and blues users.

Because the history of IV drug abuse among the T's and blues users at our center was generally limited to T's and blues and because they indicated a relatively short duration of abuse (mean 2.7 years), we had a rather unique opportunity to study the impact of this form of drug abuse on pulmonary function. The significant abnormalities in total lung capacity and, especially, in DLCO that occurred in the T's and blues users are all the more striking in light of the fact that T's and blues users had used their drugs an average of one-third as long as the heroin addicts. The fact that 75 percent of the T's and blues users studied were symptomatic, the majority of these (86 percent) with cough or dyspnea, reflects the clinical significance of the impairment of function. Further support for this comes from the results of our steady-rate exercise tests. In the four T's and blues abusers tested, there was a significant decrease in mean arterial oxygen tension, and an early increase in the mean alveolar arterial oxygen gradient and the mean dead space to tidal volume ratio; all abnormal responses to exercise. Furthermore, although the lower percent of predicted $\text{VO}_2 \text{ max}$ achieved by T's and blues users might only reflect relatively poor physical conditioning, it could conceivably reflect a limitation of cardiac output due to parenchymal lung involvement. In contrast, the four heroin abusers undergoing exercise had normal responses to similar degrees of exercise suggesting that in this latter group the abnormalities of DLCO noted at rest were of less clinical significance.

These findings are consistent with Overland's experience with 514 heroin addicts (38). Thus, unlike heroin, IV abuse of T's and blues is associated with a very high prevalence of clinically significant gas exchange abnormalities that occur after relatively brief periods of abuse. Since none of these young subjects had any prior underlying respiratory complaints, it is likely that their symptoms and physiological impairment are the result of their T's and blues abuse.

FETAL AND NEONATAL STUDY

From January 1980 to December 1981, 13 infants were delivered to women who abused a combination of pentazocine and tripelethamine during pregnancy. All of these women were enrolled in the first or early second trimester of pregnancy in the Perinatal Addiction Project of Northwestern Memorial Hospital's Chemical Dependence Program and completed a course of intensive prenatal care. Maternal urine samples were obtained at each clinic visit in order to screen for drug use. All of the women in this group (Group I) sporadically used other, nonnarcotic

drugs, but T's and blues were the only drugs consistently used throughout pregnancy. Although abstinence was the objective of the program, none remained clean of T's and blues abuse during the third trimester of pregnancy.

Two comparison groups were used for this study. Women enrolled in the Perinatal Addiction Project who conceived while on heroin and who were converted to low-dose methadone maintenance during the second trimester (Group II) served as one comparison group (N=46).

A group of drug-free mothers was selected in the order they presented for prenatal care to the clinic of Prentice Women's Hospital and Maternity Center (Group III, N=27). These women had no history of drug or alcohol abuse, and management of prenatal care and nutrition was similar to the two drug-abusing groups.

All three groups were matched or controlled for maternal factors which might affect neonatal outcome: race, maternal age, education, gravidity, prenatal care, nutrition, cigarette smoking, alcohol ingestion, and drug use. Analysis of variance and Chi square analysis were utilized for statistical analysis of these parameters.

All neonates were examined at birth, and the Brazelton Neonatal Behavioral Assessment Scale (BNBAS) (45) was administered at two days of age by trained examiners who were blind to the infants' prenatal history. The BNBAS is a 46 item scale which evaluates neonatal neurobehavior in four basic areas: interactive, motor maturity, state control, and physiologic control. Results of individual item ratings were analyzed utilizing a three-way analysis of variance (Group I x Group II x Group III). In addition, a priori clustering of behavioral parameters was used to group the Brazelton data into the four meaningful dimensions for analysis (46).

There were no statistical differences between T's and blues (I), methadone (II), or drug-free (III) groups as to mean maternal age (23, 24.2, and 22.2 years), educational level (11.4, 11 and 10.7 years) or gravidity (3.3, 2.7, and 2.2 pregnancies). History of cigarette smoking was similar in the three groups, with 62 percent of women in Group I, 57 percent of women in Group II, and 59 percent of women in Group III identified as cigarette smokers. Mean weight gain during pregnancy for all three groups of women was similar, with Group I women gaining a mean of 9.8 kg, Group II 10.6 kg, and Group III 11.1 kg.

Group I (1 white, 12 blacks) had a disproportionate number of black women as compared to Group II (31 whites, 13 blacks, 2 hispanics) and to Group III (7 whites, 12 blacks, 7 hispanics, 1 other) ($X^2=28.35$, $df=6$, $p<.01$). Therefore, race was statistically controlled through covariate analysis in data analysis. Women with a history of heavy alcohol use at the time of this study were enrolled in a different section of the Chemical Dependence Program and thus were not included in this study.

No medical complications of pregnancy occurred, and all infants were delivered at term gestation as determined by the criteria of Ballard et al. (47). There was an even distribution of infants by sex in all groups. One set of twins was delivered in the methadone maintenance group. Apgar scores in the three groups were similar,

and no significant perinatal complications occurred in any group. Somatic parameters and neonatal withdrawal patterns and therapy for the methadone-dependent newborns were similar to a report previously published (48). No infants in the T's and blues group required medication for withdrawal although these infants demonstrated a withdrawal pattern similar to the methadone-dependent newborns, characterized by irritability, voracious sucking, and feeding difficulties.

Somatic measures (weight, crown-to-heel length, head circumference) of the T's and blues infants were similar to those of the methadone-dependent newborns, and both Groups I and II were significantly smaller than the infants delivered to the drug-free mothers (Table 4).

Table 5 shows those items on the BNBAS for which there were statistically significant mean differences between the groups. When multiple comparisons were made using Fisher's least significant difference test, it was found that the T's and blues infants showed increased scores on predominant state and the Babinski reflex as well as a significantly decreased score on the rooting reflex when compared to the methadone-dependent and drug-free infants. The drug-free infants showed the greatest degree of consolability, the greatest maturity in visual/auditory interaction, and the most organized state control. The methadone-dependent infants demonstrated significantly reduced maturity in several orientation and motor items as compared to the drug-free group of infants.

Using the a priori cluster method of Als (46), the 47 scores of each infant's BNBAS scale were grouped into four dimensions, and ANOVA was used to compare mean differences in each dimension for the three groups of infants. Table 6 shows the analysis of these dimension scores indicated significant mean differences among the three groups. Using Fisher's least significant difference to analyze internal differences, it was found that both drug-using groups demonstrated significantly poorer interactive abilities than did the drug-free controls. In addition, infants of methadone-dependent mothers showed significantly reduced motoric ability when compared to T's and blues and drug-free infants. Other differences did not reach statistically significant levels in this sample.

The T's and blues addicted newborns in the present study showed altered fetal growth, including microcephaly, similar to that reported for methadone-dependent newborns (46). Poor prenatal care and maternal nutrition certainly play a role in the poor outcome of any infant delivered to an opiate-addicted mother, but these factors were controlled as much as possible in our study. Infants delivered to T's and blues mothers who do not receive comprehensive prenatal care would probably show an even worse outcome than those in this study, as has been demonstrated in the case of those heroin-dependent mothers who have not received methadone and who have not participated in a comprehensive prenatal program (49).

The Brazelton scale scores of the T's and blues and methadone infants in the present study reflected behavioral organization deficits in both these groups of drug-dependent newborns. The interactive deficits which were obtained using cluster analysis are consistent with the observation that these infants show withdrawal symptoms soon after birth. The motor deficits of the methadone infants found on cluster analysis also point to the interference that the maternally ingested drugs pose in the infants' early development. Individual item analysis on the BNBAS scale revealed specific problems in state control for both methadone and T's and

blues groups. These findings of increased lability of states and decreased consolability are again consistent with the early withdrawal symptoms shown by these infants and a major factor in the difficulties drug-dependent mothers encounter in caring for their infants.

Follow-up of the T's and blues infants has proven more difficult than that of infants delivered to methadone-maintained women. Without methadone replacement, it is difficult to engage and maintain contact with these women. In addition, at the time of the study, T's and blues were relatively inexpensive and readily available to the street addict, almost certainly ensuring continued use and abuse.

The data concerning methadone infants in this study is presented for comparison to emphasize that T's and blues infants are at as great a risk for poor intrauterine growth and deficits in neonatal behavior as methadone-dependent newborns. In light of these findings, we believe that intensive prenatal and follow-up care is mandatory for the development of these infants.

CONCLUSIONS

The studies presented indicate the substantial health threat posed by intravenous T's and blues use to both the user and, if the user is a pregnant woman, to her fetus. These health threats are due both to the pharmacologic effects of the drugs and the fillers used in the tablets.

The epidemic of T's and blues began in Chicago during a drought in the heroin supply, forcing opiate addicts to seek alternative drugs. Since mid-1982, the heroin supply has been increased in Chicago, resulting in a decrease in the number of T's and blues users seeking treatment. This change in the pattern of patients seeking treatment has precluded our continuing these studies.

In the spring of 1983, Winthrop Laboratories, the manufacturer of pentazocine tablets, introduced a new formulation which contains pentazocine 50 mg with the narcotic antagonist naloxone 0.5 mg. Since naloxone is not absorbed well from the gastrointestinal tract, the naloxone in the tablet is ineffective when taken orally and should produce no effect or withdrawal unless it is taken intravenously. As the new preparation becomes more widely available, it will be interesting to see if it has any further effect on pentazocine abuse. As new mixed agonist-antagonist narcotics are introduced for medicinal use and not placed under the Controlled Substances Act, will they replace pentazocine in combination with tripeleminamine?

Recent studies with tripeleminamine have demonstrated its ability to combine with opiate receptors. This may explain why it has for so many years been associated with narcotic abuse. Tripeleminamine is currently available as an over-the-counter drug, making it readily available for use with other preparations.

Certain lessons can be learned from the T's and blues experience: 1) the intravenous injection of products prepared for oral use can pose significant problems to pulmonary function from the insoluble materials found as fillers in tablets and capsules, 2) all opiate abuse effects fetal and neonatal development in a negative way and 3) reducing the supply of one illicit drug may result in the replacement of that drug with substitutes with greater negative health consequences.

LEGEND

Figure 1: Respiratory Symptoms Among 45 I. V. Drug Abusers. Respiratory symptoms, as indicated on a standardized questionnaire, were significantly more prevalent among subjects who abused T & B than among subjects who used other drugs.

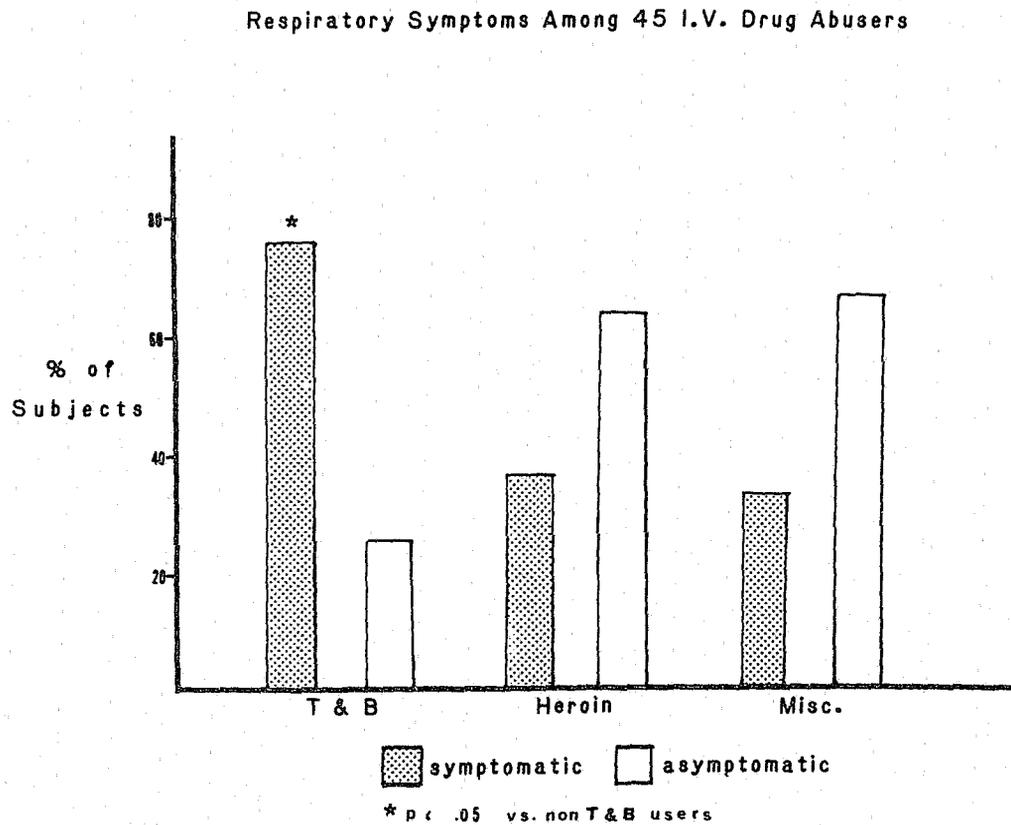


TABLE 1

I.V. Drug Abuse Study Population

	T & B	HEROIN	MISCELLANEOUS
Number of Subjects	20	19	6
Age (Years)*	28.5 ± 1.2	29.5 ± 0.9	25.7 ± 1.9
Sex (M/F)	14/6	16/3	3/3
Race	20B	16W/3B	4W/2B
Duration of Abuse (Years)*	2.7 ± 0.4 [†]	7.6 ± 0.9	1.5 ± .4 [†]
Cigarette Use (ppd)*	1.0 ± 0.2	1.1 ± .3	1.1 ± 0.6

* Values are mean ± SEM.

† p < .01 vs. heroin abusers.

TABLE 2

Pulmonary Function Test Results* Among 45
I.V. Drug Abusers*

	T & B	HEROIN	MISCELLANEOUS
FEV ₁ /FVC (Percent)	82.5 ± 1.6	80.6 ± 2.4	83.0 ± 3.4
FEF 75-25 (Percent Predicted)	90.0 ± 5.2	82.9 ± 5.3	99.0 ± 9.1
TLC (Percent Predicted)	83.0 ± 2.3 [†]	96.4 ± 3.2	90.0 ± 4.4
DLCO _{SB} (Percent Predicted)	58.4 ± 3.3 [†]	75.5 ± 5.6	77.1 ± 6.1

See text for definition of abbreviations.

* Values are mean ± SEM.

† p < .05 vs. Heroin and miscellaneous groups combined.

TABLE 3

Response to Exercise in 8 I.V. Drug Users with
Abnormal Single Breath Diffusing Capacity*

	T & B (n=4)	HEROIN (n=4)
D _L CO _{SB} (Percent Predicted)	51.8 ± 5.0	51.5 ± 1.9
Duration of Abuse (Years)	3.4 ± 1.0 [†]	6.3 ± 1.9
Percent of Max Predicted Heart Rate Attained	88.7 ± 5.0	82.9 ± 7.0
\dot{V}_{O_2} Max (ml/kg/min)	20.0 ± 1.5	30.8 ± 1.1
Percent of Max Predicted \dot{V}_{O_2} Attained	50.4 ± 3.7 [†]	70.0 ± 2
A-a O ₂ (max)	34.7 ± 9.7	25.0 ± 4.2
Δ PaO ₂ (Rest - Exercise)	-13.7 ± 6.3	+ 4.0 ± 2.3
Δ VD/ _{VT} (Rest - Exercise)	+ 3.0 ± 0.3	- 8.0 ± 0.4

See text for abbreviations.

* Values are mean ± SEM.

† p < .05 vs. heroin group.

TABLE 4

Mean Growth Parameters

GROUP	I T & B		II METHADONE		III DRUG-FREE		p [†]
	\bar{X}	S.D.	\bar{X}	S.D.	\bar{X}	S.D.	
Weight (gm)	2799*	430	2859*	590	3479	623	<.0001
Length (cm)	48.1*	1.8	48.4*	3.7	51.1	2.8	<.002
Head Circumference (cm)	32.9*	1.2	32.1*	3.5	34.7	1.7	<.003

* Significant difference from Group III (Fisher's LSD test)

† ANOVA

TABLE 5

BNBAS Items

	T & B		METHADONE		DRUG-FREE		p [†]
	\bar{X}	S.D.	\bar{X}	S.D.	\bar{X}	S.D.	
<u>Interactive</u>							
Inanimate Visual Orientation	5.2	2.7	3.3 [†]	2.2	5.6	1.9	< .002
Inanimate Auditory Orientation	5.4	1.7	3.4 [†]	1.2	5.3	2.3	< .001
Animate Visual & Auditory Orientation	5.3*	2.0	5.0*	2.1	6.5	1.8	< .04
Consolability	4.2*	2.2	4.4*	2.4	6.3	1.5	< .004
<u>Motoric</u>							
Motor Maturity	4.7	2.4	3.2 [†]	1.3	4.8	1.6	< .003
Babinski	2.3**	.5	1.4	.9	1.8	.4	< .004
Automatic Walking	1.5*	.5	1.6*	.5	2.0	.1	< .002
Placing	1.4*	.5	1.4*	.6	1.9	.3	< .006
Rooting	1.3**	.5	1.7	.4	1.8	.3	< .01
<u>Organization, State</u>							
Predominant State	4.5**	1.9	4.1	1.4	3.9	1.2	< .04
Lability of State	3.3*	1.5	3.2*	1.6	1.6	1.1	< .001

* Significant difference from drug-free (Fisher's LSD)

** Significant difference from drug-free and methadone (Fisher's LSD)

† Significant difference from drug-free and T & B (Fisher's LSD)

†† ANOVA

TABLE 6

Brazelton Scale Dimensions

	\bar{X}	S.D.	p [†]
<u>Interactive</u>			
T & B	2.56*	.73	
Methadone	2.38*	.57	< .04
Drug-free	1.96	.79	
<u>Motoric</u>			
T & B	2.11	.33	
Methadone	2.31*	.55	< .01
Drug-free	1.88	.44	
<u>Organization, State</u>			
T & B	2.33	.50	
Methadone	2.15	.37	NS
Drug-free	2.08	.28	
<u>Organization, Physiological</u>			
T & B	1.22	.66	
Methadone	1.23	.65	NS
Drug-free	1.00	.00	

* Significant difference (<.05) from drug-free (Fisher's LSD)

† ANOVA

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**ADVERSE EFFECTS ON HEALTH AND FUNCTIONS OF
COCAINE ABUSE: DATA FROM 800-COCAINE CALLERS**

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Five hundred callers to the national cocaine helpline, 800-COCAINE, were surveyed to assess drug use, demographic variables, and cocaine-related consequences on health and psychosocial functioning. The average caller was a white 30-year old employed male using 6.2 grams of cocaine per week by nasal inhalation (61 percent), freebase smoking (21 percent), or intravenous injection (18 percent). Callers attributed numerous medical, psychological, social, family, and employment problems to cocaine use. Most rated themselves as addicts with multiple areas of drug-related dysfunction, irrespective of route of cocaine administration. Our findings challenge popular beliefs that cocaine is a benign "recreational" drug and show that intranasal users are not exempt from compulsive use patterns and adverse effects.

INTRODUCTION

Cocaine use has increased dramatically in the U.S. in recent years. Surveys (1,2) estimate that over 22 million Americans have used the drug and the numbers continue to soar at a rapid rate. With its increased use, cocaine-related health consequences have become more prevalent. On a national level, cocaine-related deaths and emergency room visits have increased over 200 percent since 1976 and cocaine-related admissions to government treatment programs have increased over 500 percent (3).

Despite these disturbing trends, the popular belief that cocaine is a relatively benign drug without significant hazards or addiction potential continues to be perpetuated. Such misconceptions are fostered by a lack of adverse publicity about cocaine and a paucity of published studies describing dysfunctional cocaine use. The tendency to underestimate cocaine's abuse potential and adverse effects is especially true for use of the drug by the intranasal route ("snorting") which is the most popular method of self-administration. Some authors (4) have suggested that severity of cocaine problems is based mainly on route of administration with intra-nasal use being regarded as relatively safe as compared to the smoking of cocaine freebase or intravenous use. Risks associated with intranasal use have been minimized.

In response to the recent increase in cocaine abuse problems, we established a national telephone helpline, 800-COCAINE, to provide information, advice and referral to treatment on a 24-hour per day, seven day per week basis. We have now conducted a survey of 500 helpline callers which demonstrates addictive patterns of use and serious adverse effects in intranasal, freebase, and intravenous users.

SUBJECTS AND METHODS

Our subjects were 500 cocaine abusers randomly selected from over 70,000 callers to 800-COCAINE during its first 12 weeks of operation beginning on May 6, 1983. Subjects had learned of the helpline from television and radio broadcasts stating that 800-COCAINE could be called anonymously from anywhere in the U.S. to obtain information or referral to treatment for a cocaine problem. Each subject voluntarily consented to a confidential 20-30 minute telephone interview conducted by an experienced drug abuse counselor. The interview included an extensive questionnaire on demographic variables, drug use, and adverse effects of cocaine use on specific aspects of the subject's health and psychosocial functioning.

RESULTS

The callers were from 37 different states in the U.S. with the majority from New York/New Jersey (37 percent), California (17 percent), and Florida (12 percent). The sample consisted of 336 males (67 percent) and 164 females (33 percent) with a mean age of 30 years. Four hundred twenty-six (85 percent) were white and 74 (15 percent) were black or hispanic. Most callers were employed (76 percent) with 40 percent earning over \$25,000 per year. They had an average of 14.1 years education.

The average caller had been using cocaine for 4.9 years. Sixty-one percent were intranasal (IN) users, 21 percent were freebase smokers (FB), and 18 percent were intravenous (IV) users. Among current FB and IV users 89 percent said they had started using cocaine by the IN route. Forty-eight percent of the sample was currently using cocaine on a daily basis. At a street cost of \$75 to \$125 per gram, callers reported spending an average of \$637 on cocaine during the week prior to calling the helpline. Sixty-eight percent said they were also using alcohol or sedative-hypnotic drugs to reduce the "jittery" stimulant effects of cocaine or to relieve the unpleasant "crash" when the cocaine euphoria wore off. The subjective effects of cocaine deemed most desirable by the callers included: mood elevation to the point of euphoria (82 percent); increased energy, increased drive and mental capacity (53 percent); and enhanced sociability and sexual arousal (21 percent).

The average caller reported 12 of a possible 21 questionnaire items for adverse psychological effects. In contrast to the acute subjective effects mentioned above, chronic cocaine use was associated with significant disruption to the user's mood and mental state, as indicated by the data in Table 1. The typical caller reported feeling chronically depressed, irritable, and overwhelmed with problems. Cognitive deficits, lack of motivation, and absence of sex drive were also common complaints. Forty-six callers reported a cocaine-related suicide attempt.

The average caller reported 11 of a possible 22 questionnaire items for adverse physical effects. As shown in Table 2, the most commonly reported symptoms included sleep problems and chronic fatigue. IN users typically complained of runny noses, sinus headaches, and nasal sores and/or bleeding. The FB smoker complained of a chronic cough, sore throat, and chest congestion resulting from frequent inhalation of hot cocaine vapors. Perhaps the most serious physical symptom was cocaine-induced brain seizures with loss of consciousness.

Callers reported numerous social, family, financial, and employment problems associated with their cocaine use. These included: loss of job (25 percent), loss of spouse (26 percent), loss of friends (51 percent), and loss of all monetary assets (42 percent). They also reported fighting and violent arguments (66 percent), threat of separation or divorce (27 percent), and absenteeism coupled with reduced productivity at work (40 percent). Fifty-seven callers (39 percent) reported having an automobile accident while high on cocaine. Callers also reported dealing cocaine (39 percent) and stealing from work, family, or friends (29 percent) to support their cocaine habit. Sixty callers (12 percent) said they had been arrested for a cocaine-related crime (dealing or possession).

Over half the callers said they felt addicted to cocaine (61 percent), could not limit their use (73 percent), and could not refuse cocaine when it was available (83 percent). They also reported feeling distressed without cocaine (52 percent) and said they experienced withdrawal symptoms when they tried to stop using it (57 percent). Despite repeated attempts to control their use, 67 percent said they were unable to remain abstinent from cocaine for as long as one month. They preferred cocaine to food (71 percent), sex (50 percent), friends (64 percent), family activities (72 percent), and recreational activities (76 percent).

All three routes of cocaine administration were associated with a high incidence and wide range of adverse effects. However, as compared to IN users, FB and IV users generally reported a greater number of cocaine-related symptoms (Table 3) and a higher incidence of certain consequences (Table 4).

DISCUSSION

Our survey findings reflect the increasing prevalence of cocaine abuse in the U.S., particularly among white, middle-class males who are otherwise not heavily involved in drugs or alcohol. Not only are more persons using cocaine, but increasing numbers are escalating to addictive patterns of use and suffering serious consequences. The popular belief that cocaine is a relatively benign drug, especially if used by the intranasal route, is challenged by our findings that all three routes of cocaine administration were associated with severe drug dependence and drug-related dysfunction. Although IN users often feel exempt from adverse consequences, our findings and others (5), including reports of death from IN cocaine use (6), underscore the fact that this route of administration offers no guarantee of safety. However, FB and IV users do tend to suffer more numerous and more severe drug-related consequences. The sharp rise in cocaine plasma levels following FB and IV administration (7) increases the abuse potential and threat of adverse reactions. As compared to IN administration, FB and IV use produce a more rapid onset of effects, a more intense euphoria, and a more intense rebound dysphoria. These characteristics drive the individual user toward more exaggerated patterns of use.

Our findings do not indicate that occasional cocaine use inevitably leads to severe drug dependency and major dysfunction. Our sample consisted of self-defined problematic users and our results must be interpreted accordingly. However, it also cannot be concluded that occasional or so-called "recreational" cocaine use is harmless. Given the extremely potent reinforcing effects of cocaine there is always a very real potential for an individual's use to escalate. It is the sudden and unpredictable escalation from occasional to regular and compulsive that is of greatest concern. The question of why some cocaine users escalate to compulsive patterns is of substantial clinical importance, but remains largely unanswered at present. It may be that stressful life events, certain psychological factors, social encouragement, and ready access to cocaine combine with one another to create the potential for escalating use.

Although an extreme psychological addiction to cocaine undoubtedly develops in some users, whether cocaine also produces a true physical addiction remains unclear. Cessation of chronic cocaine use usually does not lead to a clearly definable withdrawal syndrome as with opiates or barbiturates. However, the generalized dysphoria and other feelings of malaise following cocaine use may be viewed as a withdrawal state especially since they are often associated with drug craving and drug-seeking behavior and are relieved by resumption of drug use. A temporary depletion of brain catecholamines and serotonin (8) may serve as the biochemical basis of abstinence symptoms following cocaine use. The tolerance that develops to cocaine's euphorogenic effects also suggests that there may be a physiological component underlying cocaine dependence. Increased tolerance may explain why some heavy users can self-administer as much as ten grams per day without severe toxic or lethal reactions.

Patterns of more frequent and escalating cocaine use are promoted to some extent by the drug's pharmacologic properties. Cocaine is an extremely potent reinforcer with highly desired subjective effects including euphoria and feelings of enhanced physical, mental, and sexual capabilities. These effects are rapid in onset and rather short-lived such that administration of the drug must be repeated every 20-30 minutes in order to maintain the "high" and the "crash" is intensified,

leaving the user with a powerful craving for more cocaine. Many users take as much of the drug as they are able to obtain until they exhaust their drug supplies, money, or collapse from physical exhaustion. With continued use, the pleasurable effects of cocaine diminish and are replaced by an increasing number of adverse effects which can be alleviated only by cessation of use. Thus, patterns of escalating cocaine use can be seen to arise from an almost obsessive desire to recapture the ephemeral euphoric state, an attempt to avoid the unpleasant rebound dysphoria, and an attempt to medicate oneself in response to acute or chronic stressors which may include certain psychiatric disorders (9).

Chronic cocaine use typically leads to chronic depression, fatigue, irritability, and impotence or loss of sexual desire. The probability of adverse reactions to cocaine is primarily a function of dosage. Repeated administration within short intervals of time can lead to cumulation of cocaine in plasma (12) and increase the risk of medical sequelae. Individual sensitivities to the adverse effects of any drug may vary widely so that a "safe" dose for one person may be a dangerous one for another. In some cases continued high-dose abuse may lead to chronic toxicity characterized by extreme agitation, paranoia, panic anxiety, and ultimately to a psychotic state almost indistinguishable from paranoid schizophrenia (10). Acute toxic reactions may be characterized by muscle twitching, increased deep tendon reflexes, increased blood pressure and pulse rate, cardiac arrhythmia, and, occasionally, convulsions and respiratory failure. The clinical management of cocaine toxicity has been described elsewhere (11).

A potentially serious but often overlooked consequence of cocaine abuse is its tendency to foster the abuse of other drugs or alcohol. Many cocaine users report heavy use of sedative-hypnotics, alcohol, and in some cases heroin to reduce the stimulant effects of cocaine and relieve the unpleasant "crash". This can lead to overdose reactions and to violent or suicidal behavior.

Cocaine abuse has a potentially devastating impact not only on the individual user, but on society as well. Some abusers admit to being a hazard while driving under the influence of cocaine and report having serious automobile accidents. Also, many hold jobs with significant responsibility for the health and well-being of others. Callers to 800-COCAINE have included airline employees, physicians, nurses, dentists, psychologists, school bus drivers, attorneys, railroad signal operators, automobile mechanics, and prison guards. The negative impact of cocaine abuse is also being felt by American industry in the form of employee absenteeism, impaired work performance, and increased medical costs (13).

There is presently no specific treatment for cocaine abuse with demonstrated long-term efficacy. Our clinical experience suggests that some form of supportive counseling, peer-support group, and urine monitoring seems to be essential for treatment success. As in other drug or alcohol dependencies, treatment will be ineffective as long as the patient continues to abuse cocaine and thus the first goal of treatment must be cessation of cocaine use and a strong commitment to maintaining abstinence. Some cocaine abusers are able to do this on an outpatient basis while others require a period of hospitalization because of medical problems, psychosis, acting-out behavior, polydrug addiction, or an inability to stop using cocaine on an outpatient basis.

The large volume of calls to our helpline, which now receives as many as 1,000 calls per day from across the U.S., suggests that cocaine abuse is a massively escalating problem that has been largely hidden from scientific or public analysis. With increased use of cocaine, health consequences have become more prevalent and the personal and social costs have grown. Cocaine is an insidious drug, thought of as harmless by many people, but it often leads to severe consequences for those who abuse it. If cocaine were more readily available and at a lower cost, or if social sanctions and scientific information failed to caution against the potential dangers, dysfunctional cocaine use might become more prevalent.

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TABLE 1

Incidence Of Adverse
Psychological Effects
(N=500)

	<u>N</u>	PERCENT
Depression	415	83%
Anxiety	416	83%
Irritability	408	82%
Apathy, Laziness	328	66%
Paranoia	326	65%
Difficulty Concentrating	323	65%
Memory Problems	287	57%
Sexual Disinterest	265	53%
Panic Attacks	248	50%
Attempted Suicide	46	9%

TABLE 2

Incidence Of
Adverse Physical Effects

	<u>N</u>	PERCENT
Sleep Problems	410	82%
Chronic Fatigue	380	76%
Severe Headaches	300	60%
Nasal Sores, Bleeding	291	58%
Chronic Cough, Sore Throat	228	46%
Nausea, Vomiting	193	39%
Seizure, Loss Of Consciousness	70	14%

TABLE 3

Mean Number Of Reported
Consequences In Each Category
(N=500)

	IN (N=306)	FB (N=103)	IV (N=91)
Psychological (21)*	10.3	13.3	12.8
Physical (22)	10.2	12.1	10.7
Social, etc. (20)	5.6	8.0	8.9
Addiction (23)	12.8	15.6	16.1
TOTAL (86)	38.9**	49.0	48.5

* Numbers in parentheses represent the total number of questionnaire items in each category.

** $p < .05$

TABLE 4

Incidence Of
Selected Consequences

	IN (N=306)	FB (N=103)	IV (N=91)
Automobile Accidents	8%	21%	13%
Job Loss	10%	24%	33%
Seizures	4%	26%	23%
Paranoia	58%	78%	76%
Panic Attacks	42%	64%	57%
Feel Addicted	57%	70%	66%
Withdrawal Symptoms	49%	73%	65%

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HEROIN INCIDENCE 1965-1981

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Heroin incidence (new initiates per year) is studied by means of a national household survey conducted in 1977, 1979, and 1982. For the first time, there are enough cases (274) to construct an "incidence curve," i.e., the number of new heroin users for each year of first use (YFU). To test the validity of this "incidence curve" based on household survey data, the household survey incidence curve is compared to the YFU data from heroin treatment admission by age, race, and frequency of use, as well as to the number of hepatitis B cases per year. Finally, the household incidence time series for persons age 12-25 is compared to the time series of percent high school seniors ever using heroin.

The four indicators of heroin incidence show epidemic periods in the early 1970s, mid-1970s, and/or the early 1980s. The number of new users in households reached a maximum of approximately 180,000 new users per year between 1970 and 1976, but declined to approximately 70,000 new users per year by the early 1980s. Approximately 1 in 17 heroin initiates in households will enter federally-funded treatment (in 5 years). The small proportion to enter treatment may be related to the low frequency of use for household residents.

The number of heroin initiates based on the household survey considered by age, race, and frequency of use show similar patterns to the YFU data from treatment admissions. Respondents in the household survey age 26 and older at the time of the survey were susceptible to the early 1970s' and the mid-1970s' epidemic, uniformly. After a sharp decline in the number of new users by 1977-1978, the initiates age 26 and older increased again in the early 1980s. The group of respondents age 12-25 at the time of the survey were most susceptible to the mid-1970s' epidemic.

The number of white users and users of other races, when examined by year of first use, shows increases in the number of new users both in the early 1970s' and the mid-1970s' epidemic periods. The number of white initiates was two to three times the number of initiates of other races. The incidence data for black users must be interpreted with caution because of the small frequencies in the number of non-white heroin users interviewed in the household survey.

The number of frequent users (use 11 or more times in a lifetime) was highest for the epidemic occurring in the early 1970s, while the number of infrequent users (one to ten times in a lifetime) showed increases in the early 1970s' and mid-1970s' epidemic periods.

PROCEDURE

Four incidence indicators were studied for the period 1965-1981; (1) the National Survey on Drug Abuse, a face-to-face household survey, (2) the year of first use data from federally-funded treatment admissions, (3) the number of hepatitis B cases per year, and (4) the national survey of high school seniors.

Household Survey-based Incidence Curve

The 1977, 1979, and 1982 households surveys each contain items relating to the year of first heroin use and the age of first heroin use. The "age of first use" item was used rather than the "year of first use" item because trends based on the "year of first use" item exhibited an erratic pattern not consistent with the trends of other incidence indicators. Age of first use may be a better indicator because it is more easily remembered than the year of first use.

The age of first use (AFU) was converted to year of first use (YFU) by combining AFU with the year of the survey (YOS) and the age at the survey (AAS) using equation (1).

$$\begin{aligned} YFU &= YOS - (AAS - AFU) && (1) \\ &\text{or} \\ YFU &= YOS - AAS + AFU \end{aligned}$$

Since the data were pooled over three surveys, the data were first weighted based on the survey sampling plan. Then each observation was weighted in accordance with the population represented. The three surveys' population projections were then totaled and divided by three. This pooling procedure takes into account the aging of the population from one survey to another and the differing sample sizes in each of the surveys.

For the years of first use 1978 through 1982, less than three surveys were available for contribution. Thus, cases reporting the year of first use 1978 and 1979 were given an additional weight of 1.5. The cases reporting the year of first use 1980 or 1981 were given an additional weight of 3.0.

The number of initiates per year by year of first use from the Household Survey was converted to two-month moving averages to permit smoothing of the data. The number of initiates as well as the two-month moving average are plotted on the figures although the lines join the averaged points.

Treatment-based Incidence Curve

The number of new users per year entering treatment for the first time is obtained from the question on the treatment admission form, "In what year did you first use (heroin)?" These data, when tabulated by year of first use, produce an incidence curve. Because recent initiates will wait for some time before entering treatment, a correction to the treatment data is needed. This correction procedure is based on the distribution of the lag time between first use and treatment. The YFU distributions from treatment admissions to federally-funded treatment programs are available through the Client Oriented Data Acquisition Process (CODAP).

Hepatitis-based Incidence Curve

Hepatitis B is often contracted by new users of heroin since part of the heroin using ritual is needle sharing. After contracting the disease, a second occurrence is rare. Thus, the number of hepatitis B cases may serve as an indicator of the number of heroin initiates.

The number of hepatitis B cases per year has been reported by the Centers for Disease Control since 1966. A general increasing trend in the number of reported cases is thought to be attributable to two factors, the improved reporting of hepatitis B cases and the increasing number of male homosexuals thought to be susceptible to hepatitis B.

Assuming that the improved reporting and the increase in the number of male homosexuals with hepatitis B is a linear function of time, that trend can be removed. After removing the linear trend, the remaining trend, i.e., the residuals, is thought to represent the number of hepatitis B cases associated with intravenous drug use.

Since most intravenous drug use involves the use of heroin, it is assumed that the residuals after the linear trend is removed represent the number of reported hepatitis B cases associated with heroin use. Some intravenous drug users use substances such as cocaine or opiates other than heroin. Treatment data show, however, that these users often have also used heroin.

High School Senior Incidence Curve

Treatment admission data show that the mean age at first use for heroin is age 18 and that most users start between the ages of 16 and 20. Thus, a high school senior having used heroin is likely to have begun within one to two years prior to the survey. Because of the close proximity of the year of first use to the date of the survey, the plot of lifetime prevalence versus the year of the survey can be considered an incidence curve with a one to two year lag.

FINDINGS AND DISCUSSION

Table 1 shows the number of heroin users from the 1977, 1979, and 1982 National Survey on Drug Abuse by year of first use, 1965 through 1982. While the number of heroin users in any one survey is small, the pooled data produces frequencies large enough for analysis. A total of 274 cases were available from the pooled data.

TABLE 1

**Number of Cases in National Survey on
Drug Abuse Reporting Heroin Use
in Lifetime 1977, 1979, and 1982**

<u>Year of First Use</u>	<u>Number of Cases</u>
1971	20
1972	23
1973	22
1974	26
1975	24
1976	28
1977	21
1978	20
1979	7
1980	6
1981	2

Table 2 and figure 1 show the population projections for all three surveys combined, presenting the two-year moving averages. The number initiated increased through the late 1960s from less than 30,000 new cases per year to approximately 180,000 new users per year in the early 1970s. By 1977 and 1978, the number of new cases declined to approximately 70,000 per year.

The two epidemic periods between the early 1970s and the mid-1970s corresponds to the period of plentiful heroin from the "French Connection" and Mexico. After approximately 1972, when the "French Connection" was broken and after approximately 1976, when the Mexican poppy fields were sprayed, the heroin supply was reduced. The current supply appears to be from Southeast and Southwest Asia and Mexico.

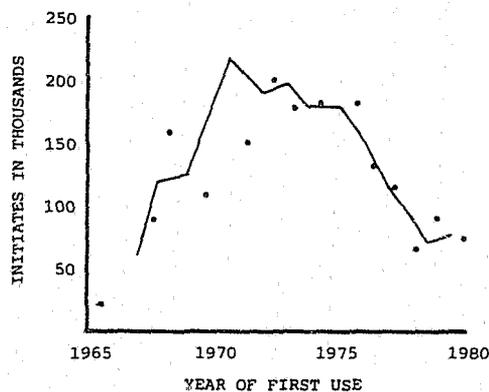
TABLE 2

**Number of Heroin Initiates in
Thousands by Year of First Use**

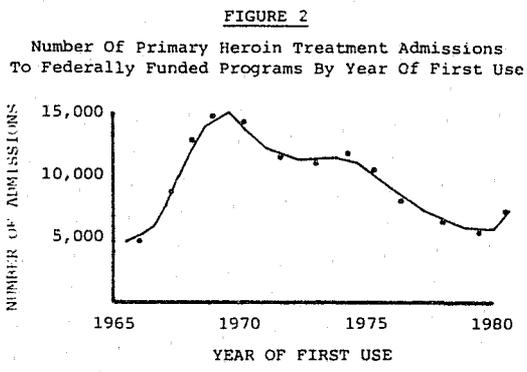
<u>Year of First Use</u>	<u>Number of Initiates in Thousands</u>
1965	23
1966	43
1967	95
1968	158
1969	112
1970	284
1971	153
1972	205
1973	174
1974	178
1975	179
1976	138
1977	109
1978	55
1979	80
1980	63
1981	20

FIGURE 1

**Number Of Heroin Initiates In Thousands
By Year Of First Use**



The number of new users entering treatment in a five-year period is shown in figure 2. Again, the characteristic epidemic periods are noted, i.e., one in the late 1960s and early 1970s, one in the mid-1970s and a recent increase. The trend in the number of new cases of heroin use in households corresponds to the number of new cases that eventually enter treatment. A linear fit to the function "number of household heroin users = M x the number of treated heroin users" yields an M of 17. Thus, it is estimated that 1 in 17 household resident heroin users will enter federally-funded treatment programs.



Analysis of the year of first use data from the pooled surveys by age, race, and region show findings consistent with the trends based on the year of first use data from treatment admissions. Table 3 and figure 3 show the distribution of new users by age group 12-25 and 26 and older. While the number of new users age 26 and older has shown a recent leveling trend as well as the characteristic increases during the early 1970s and mid-1970s, the time series of young initiates shows the mid-1970s' epidemic and no other.

The trend in the number of heroin initiates by year based on survey data shows a pattern similar to the trend noted in the treatment year of first use data. The number of initiates entering treatment that started use at age 18 and under has been declining since 1969. The number of initiates starting use at age 18 and older has been increasing.

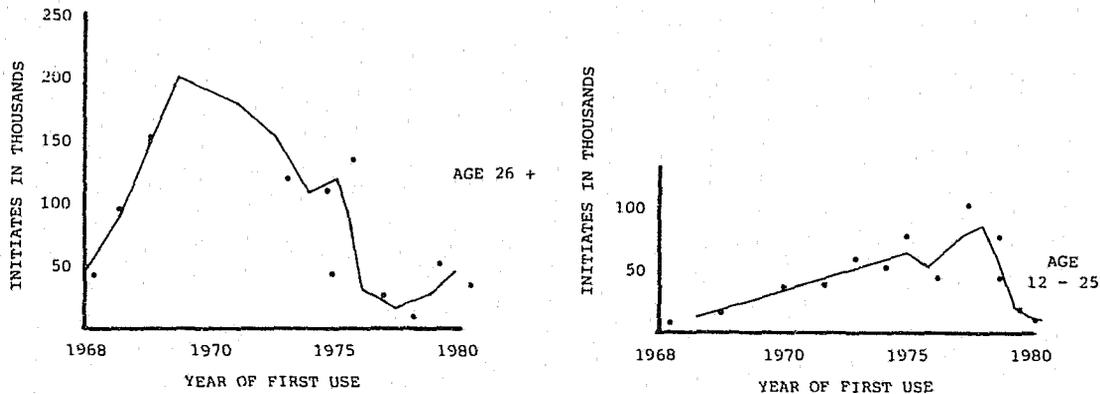
TABLE 3
 Number of Herion Initiates in Thousands
 by Year of First Use by Age at Survey

<u>Year of First Use</u>	<u>Number of Initiates in Thousands</u>	
	<u>12-25</u>	<u>26+</u>
1965	0	23
1966	0	43
1967	1	94
1968	11	147
1969	13	99
1970	31	252

TABLE 3 (Cont'd.)

<u>Year of First Use</u>	<u>Number of Initiates in Thousands</u>	
	<u>12-25</u>	<u>26+</u>
1971	36	117
1972	58	146
1973	63	111
1974	74	104
1975	58	121
1976	101	36
1977	83	26
1978	45	10
1979	29	51
1980	23	40
1981	21	0

FIGURE 3
Number Of Heroin Initiates By Age At Survey



National Household data is not often used for analysis of differences by race because few respondents of "other race" were included in the survey. Nonetheless, the trend of new heroin use by race parallels the trend observed in treatment YFU data. Table 4 and figure 4 show the number of initiates by race based on the national household survey. Among whites, the increases in new use can be seen in the early and mid-1970s. These data are consistent with the trends in new use found for treatment admissions. While the average number of non-white initiates in households remained less than 60,000 from 1965 through 1981, the small fluctuations in the number of non-white initiates exhibits the characteristic epidemic pattern.

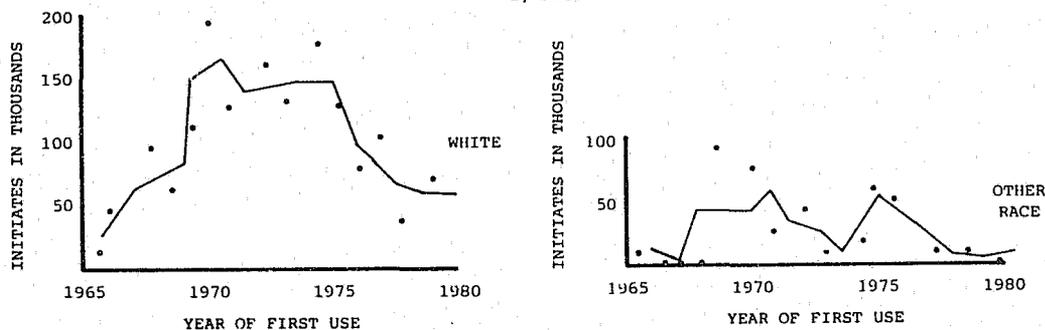
TABLE 4

Number of Heroin Initiates By Race

<u>Year of First Use</u>	<u>Number of Initiates in Thousands</u>	
	<u>White</u>	<u>Other</u>
1965	13	10
1966	43	0
1967	94	1
1968	59	98
1969	102	9
1970	200	84
1971	125	28
1972	158	46
1973	130	6
1974	166	12
1975	121	59
1976	78	54
1977	103	6
1978	45	9
1979	80	0
1980	48	15
1981	21	0

FIGURE 4

Number Of Heroin Initiates By Race



The frequent heroin user is more likely to enter treatment than the infrequent user. Thus, we would expect the distribution of frequent users in households to resemble the distribution of treated new users. Table 5 and figure 6 show the number of heroin initiates in households by year of first use for persons using one to ten times in a lifetime and for persons using 11 or more times in a lifetime. Based on the survey findings, the frequent users were initiated primarily during the early 1970s' epidemic period with fewer new users initiated during the 1974-1976 and the recent epidemic periods. This pattern is followed for treated heroin initiates, i.e., the early 1970s' epidemic is predominant with the 1974-1976 and the recent epidemic less pronounced.

Infrequent users, i.e., "chippers," were introduced in all three epidemic periods, with the 1974-1976 period being the most frequently mentioned period of first use. Thus, the survey data show that the infrequent user is most susceptible to changes in heroin supply. These "chippers" are not likely to enter treatment.

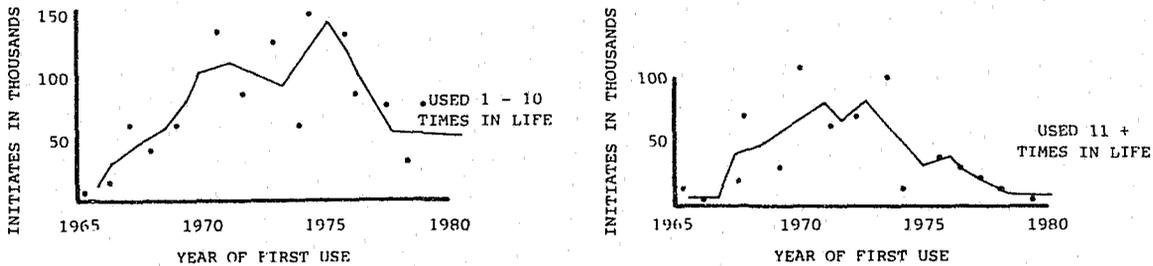
TABLE 5

Number of Heroin Initiates by Frequency of Use

<u>Year of First Use</u>	<u>Number of Initiates in Thousands</u>	
	<u>1-10 uses</u>	<u>11+ uses</u>
1965	13	10
1966	19	0
1967	60	11
1968	46	71
1969	21	22
1970	142	116
1971	82	71
1972	125	73
1973	60	111
1974	156	20
1975	139	40
1976	99	31
1977	83	26
1978	44	11
1979	80	0
1980	46	16
1981	21	0

FIGURE 5

Number Of Heroin Initiates By Frequency Of Use



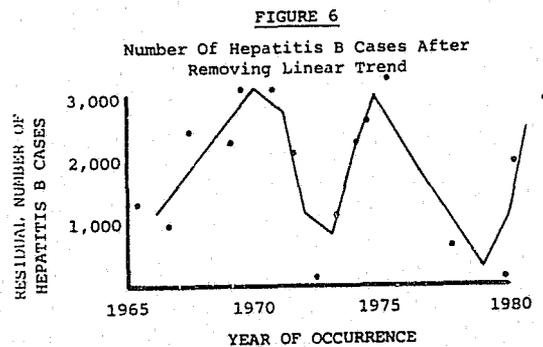
Hepatitis Cases

Because of improved reporting and the association of hepatitis B with male homosexuals, a linear trend was first removed from the data. Table 6 and figure 6 show the residuals after the removal of the linear trend. The years in which a peak in the number of cases occurred were 1973, 1977, and probably the early 1980s, a pattern consistent with that noted in the household survey data.

TABLE 6

Number of Hepatitis B Cases

<u>Year</u>	<u>Number of Cases</u>
1966	1497
1967	2458
1968	4829
1969	5909
1970	8310
1971	9556
1972	9402
1973	8451
1974	10631
1975	13121
1976	14973
1977	16831
1978	15016
1979	15452
1980	19015
1981	21152
1982	21532



The percent of high school seniors having ever used heroin displayed in Table 7 and figure 7 by year of the survey show a trend similar to that of other incidence indicators. In 1975, 2.2 percent of the high school seniors had ever used heroin. By 1982, the percent had declined to 1.2 percent. The relatively high prevalence in the mid-1970s and later sharp decline corresponds to the decline in incidence shown in the national household survey data for 12-25 year olds.

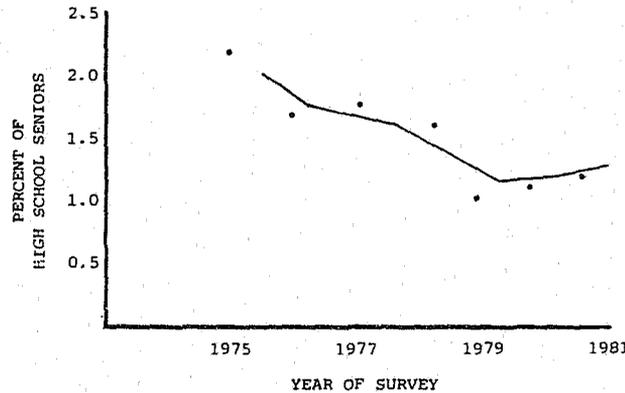
TABLE 7

**Percent Of High School Seniors Using Heroin
At Least Once In Lifetime**

<u>Year</u>	<u>Percent</u>
1975	2.2
1976	1.8
1977	1.8
1978	1.6
1979	1.1
1980	1.1
1981	1.1
1982	1.2

FIGURE 7

Percent Of High School Seniors Using Heroin At Least Once In Lifetime



Summary

The year of first use data from household surveys conducted in 1977, 1979, and 1982 were pooled to show the number of new users in the household population by year of first use. The early 1970s' and the mid-1970s' epidemics were evident. These epidemic periods occur at the same periods noted in the treatment year of first use data. The survey data when considered by age, race, and frequency of use show similarities to the trends noted for treated initiates.

Variations in the number of hepatitis B cases parallel the variations for the year of first use data in treatment admissions and survey respondents.

The time series of new use for persons age 12-25 in households parallels the time series of lifetime prevalence for high school seniors.

HEROIN PREVALENCE VERSUS FREQUENCY OF USE

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ABSTRACT

This paper shows that if the data for prevalence and the data for frequency of use of heroin are transformed by taking the logarithm to the base 10 and the points for these pairs of data are plotted, these points will appear to fall on a straight line. This relationship is not immediately apparent from the published data since the published data are for prevalence over several frequency of use intervals. Calculating the height of the point over the midpoint of each interval by dividing the number of cases by the interval width results in data which appear to be on a straight line when plotted on Log x Log graph paper. This relationship was found for data provided by the Client Oriented Data Acquisition Process, the National Household Survey on Drug Abuse, and the Monitoring the Future, the annual High School Survey on Drug Abuse.

The problem which motivated this research was the need for some description of the distribution of the frequency of use of heroin in the United States population. Knowledge of this frequency distribution is important for several reasons. First, such knowledge helps us to interpret the relationship among data from several sources, i.e., the data describing federally funded treatment for drug abusers from the Client Oriented Data Acquisition Process (CODAP), developed and run by the National Institute on Drug Abuse (NIDA), the data from the National Household Survey on Drug Abuse (HSS), developed and operated by a grantee at the University of Michigan, Institute for Social Research. The second reason for developing a frequency of use model for heroin is to help place in perspective the data from these various sources, each of which describes a subset of the United States population, relative to a national model of heroin prevalence. In this paper I will present only the procedures by which the data were manipulated, examples of such manipulation, and the resultant graphs of prevalence versus frequency of use of heroin for the three data sources. Probability frequency distribution models which relate the distribution of the number of people to the distribution of the amount of alcohol consumed annually has been developed by Lederman (Sully Lederman 1956). The Lederman model took the form of the "Log-normal" probability distribution. A description of the mathematics of the "Log-normal" distribution is contained in Johnson and Kotz (1970). Later, this same "Log-normal" model was applied by Smart (1971), and Gabriel Nahas (Nahas 1982). The "Log-normal" model appears to fit the frequency distribution of people over categories of frequency of use of heroin in a lifetime as reported in the two surveys mentioned, and frequency of use of heroin in the 30 days prior to treatment admission reported to CODAP. Simple "Log-normal" non linear least squares regression results in a model which has lower predicted number of people than those observed in the data for high frequency of use intervals. The "Log-normal" model fits not only the frequency distribution of people for the United States household population, the high school senior population, and the subpopulations by race, age, region, and epidemic period. The distribution of people over frequency

of drug use intervals can be easily examined for the presence of a relation like the "Log-normal" because of the exponential form of the "Log-normal" distribution. The very quick numerical method presented here is not meant to replace a thorough theoretical examination of the frequency distribution of people over frequency of drug use categories, but only is intended to provide an easy method for preliminary examination of such data and illustrate the presence of the relationship in several subsets of the United States population.

Procedure

Table 1 presents pooled data from three national household surveys administered in 1977, 1979, and 1982. The total weighted cases given are responses to the question, "About how many times in your lifetime have you used heroin?" As a first approximation, I assume that the distribution of frequency of use over each frequency of use interval is uniform. This allows the calculation of the height of the midpoint of the frequency of use interval to be the division of the total number of users, or the percent of users by the number of integer frequency of use categories in the interval. The approximate form of the function which relates the number of users to the frequency of use will then pass thru the points having the coordinates percent of count divided by width and frequency of use interval midpoint. Application of the "Log-normal" model involves calculation of cumulative percentages and application of sophisticated maximum likelihood estimation procedures. The fitting of the "Log-normal" model will not be shown here. Instead, I will show the fit of a simple linear relationship between the log 10 of the percent people divided by the interval width and the log 10 of the mean frequency found in the household survey data. Figure 1 shows a graph of the prevalence by frequency of heroin use in a lifetime from the household survey data.

Table 2 gives the result of averaging the percent of people who have reported heroin use in response to the question in the High School Survey, "On how many occasions (if any) have you used heroin (smack, horse, skag)?" The average percent is then divided by one plus the interval width to determine the approximate height of the midpoint of the frequency of use interval. The midpoint of the frequency of use interval is then calculated. The log 10 is then taken of both dimensions of all coordinate pairs. The points are then plotted in the graph shown in Figure 2.

Table 3 shows data produced from the question asked in the treatment admission form used in reporting to the CODAP system. The question has two sets of frequency of use in the last 30 day categories. The categories were grouped so as to form three frequency of use intervals which are given in Table 3. For data reported by people admitted to treatment in 1977 and 1978, the categories "once per month" and "once per week" are combined; the categories "2 or 3 times per week," "more than 3 times per week," and "once daily" are combined; and the categories "2 or 3 times daily" and "more than three times daily" are combined. For data reported by people admitted to treatment in 1979, 1980, and 1981, the category "less than once per week" is the first interval; the categories "once per week," "several times per week," and "once daily" are combined to form the second interval; the categories "2 or 3 times daily" and "more than 3 times daily" are combined to form the third interval. Data in the first column of Figure 3 are in uses of heroin per day over the 30 days prior to admission. To make the data from the treatment admissions comparable to that from the surveys, the numbers

for uses per day were extrapolated to uses in 10 years by multiplying by the number of days in 10 years (3,650). The calculation of the locations of the coordinate points is similar to that performed for data from the High School Survey. The graph of these points is shown in Figure 3.

Findings And Conclusions

The data for lifetime frequency of heroin use and frequency of heroin use in the 30 days prior to admission to a drug abuse treatment program appear to have a linear relationship between the log 10 of this frequency of use intervals. This relationship also exists for demographic and temporal subgroups of these populations. From this it would appear that the data may be useful in helping to describe the prevalence of heroin use in the United States.

TABLE 1

Log Log Distribution of
Number of Heroin Users in
Households By Frequency of Use
1977, 1979, and 1982

TIMES USED IN LIFETIME	INTERVAL WIDTH	CASE COUNT	CASE COUNT/WIDTH	PERCENT OF COUNT/WIDTH	INTERVAL MIDPOINT
1-2	2	91	45.546	88.682	1.5
3-10	8	42	5.253	10.229	6.5
11-99	89	44	.505	.984	55.0
100-535	435	23	.054	105	317.0

LOG 10 Midpoint	LOG 10 ((Pct.(c/w)) x1000)
.18	4.947
.81	4.010
1.74	2.993
2.50	2.021

FIGURE 1

Log Log Distribution of
Number of Heroin Users in
Households By Frequency of Use
1977, 1979, and 1982

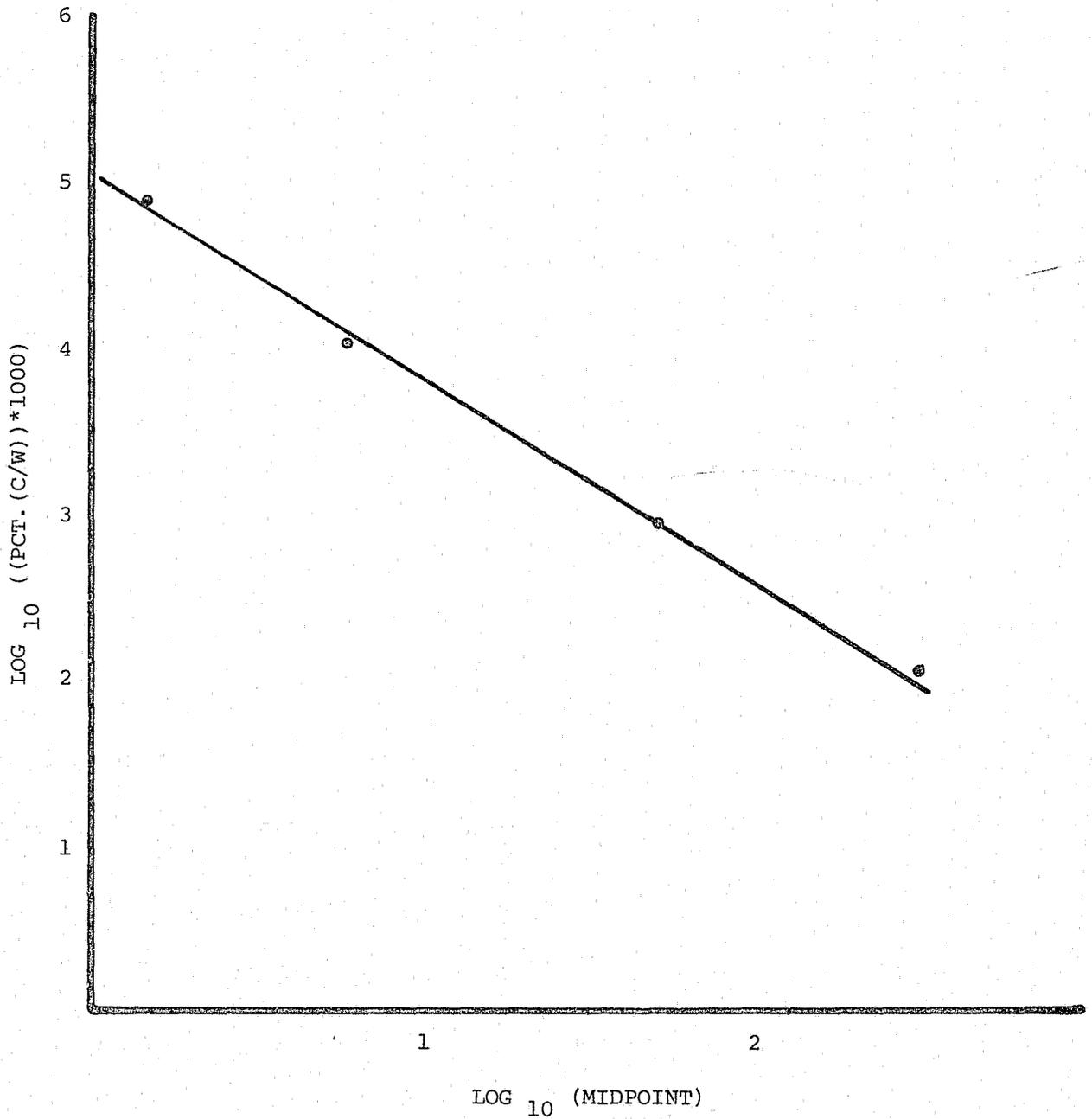


TABLE 2

Log Log Distribution Of Number Of Heroin Users
 In 12th Grade By Frequency Of Use
 1977 Through 1981

TIMES USED IN LIFETIME	INTERVAL WIDTH	AVERAGE PERCENT IN INTERVAL	AVERAGE PERCENT /WIDTH	INTERVAL MIDPOINT	LOG 10 MIDPOINT	LOG 10 ((%/ WIDTH)x1000
1-2	2	62.98	31.49	1.5	1.18	4.50
3-5	3	14.18	4.73	4.0	1.60	3.67
6-9	4	7.24	1.81	7.5	1.88	3.26
10-19	10	4.84	.484	14.5	2.16	2.68
20-29	20	3.60	.180	29.5	2.47	2.26
40+	-	7.08	-			

FIGURE 2

Log Log Distribution of
Number of Heroin Users in
12TH Grade By Frequency of Use
1977 Thru 1981

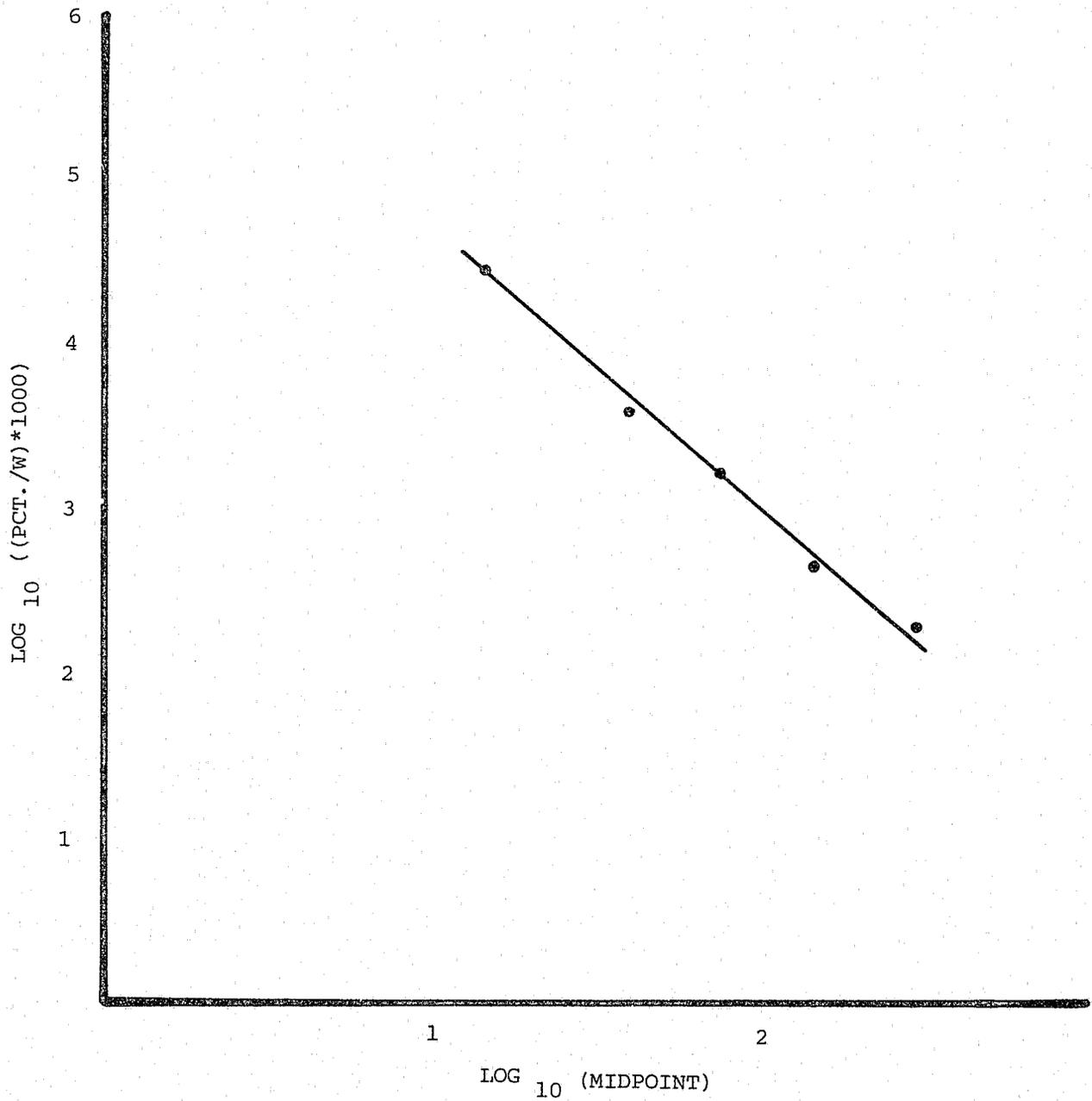


TABLE 3

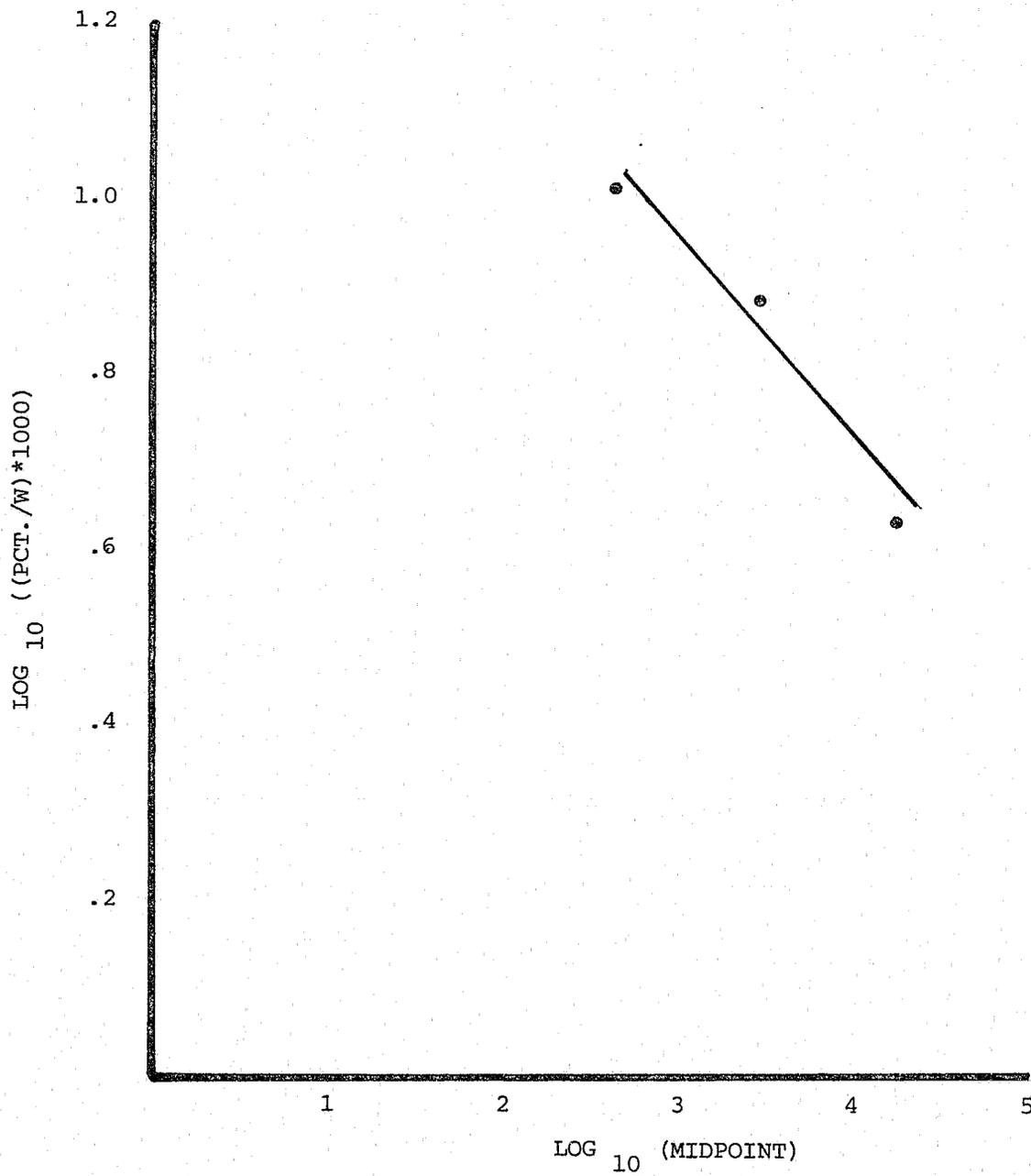
Log Log Distribution Of Number Of Heroin Users
In Federally Funded Treatment
1977 Through 1981

TIMES USED PER DAY IN PAST MONTH	TIMES USED IN 10 YEARS	INTERVAL WIDTH	AVERAGE PERCENT IN INTERVAL	AVERAGE PERCENT /WIDTH	INTERVAL MIDPOINT
1/30-3/14	121.66-782	661.34	5.2689	.011662	451.83
3/14-1.5	782-5475	4694	21.843	.006982	3128.5
1.5-8	5475-29200	23725	72.884	.004238	17337.5

LOG 10 MIDPOINT	LOG 10 ((%/w) x1000)
2.655	1.067
3.495	.844
4.238	.624

FIGURE 3

Log Log Distribution of
Number of Heroin Users in
Federally Funded Treatment
1977 Thru 1981



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Some of the data on which the demonstrations in this paper are based are available in published books and statistical series. These are as follows:

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- National Institute on Drug Abuse, Statistical Series, Annual Data, 1979. Data from the Client Oriented Data Acquisition Process, CODAP, Series E, Number 17, U.S. DHEW, ADAMHA.
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- National Institute on Drug Abuse, Statistical Series, Annual Data, 1981. Data from the Client Oriented Data Acquisition Process, CODAP, Series E, Number 25, U.S. DHEW, ADAMHA.

The data from the Monitoring the Future Project is available from the following publications:

- Johnston LD, Bachman JG, O'Malley PM: Monitoring the future questionnaire responses from the nation's high school seniors 1977. Survey Research Center, Institute for Social Research, The University of Michigan, Ann Arbor, Michigan, 1980.
- Johnston LD, Bachman JG, O'Malley PM: Monitoring the future questionnaire responses from the nation's high school seniors 1978. Survey Research Center, Institute for Social Research, The University of Michigan, Ann Arbor, Michigan, 1980.
- Johnston LD, Bachman JG, O'Malley PM: Monitoring the future questionnaire responses from the nation's high school seniors 1979. Survey Research Center, Institute for Social Research, The University of Michigan, Ann Arbor, Michigan, 1980.
- Johnston LD, Bachman JG, O'Malley PM: Monitoring the future questionnaire responses from the nation's high school seniors 1980. Survey Research Center, Institute for Social Research, The University of Michigan, Ann Arbor, Michigan, 1981.

Johnston LD, Bachman JG, O'Malley PM: Monitoring the future questionnaire responses from the nation's high school seniors 1981. Survey Research Center, Institute for Social Research, The University of Michigan, Ann Arbor, Michigan 1982.

Some summary descriptive information about the National Survey on Drug Abuse is available in the following documents.

Abelson HI, Fishburne PM, and Cisin IH: National Survey on Drug Abuse: 1977, A Nationwide Study: Youth, Young Adults, and Older People, Volume I, Main Findings. National Institute on Drug Abuse, Rockville, Maryland, DHEW Pub. No. (ADM) 78-618, 1977.

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Data on which this research is based are available in standard computer readable files through coordination with the Project Officer at NIDA for the grants supporting the National Household Survey on Drug Abuse, and the Monitoring the

Future Project. Data from the files of the Client Oriented Data Acquisition Process are available from the Division of Epidemiology and Statistical Analysis, National Institute on Drug Abuse, Rockville, Maryland. The NIDA Project Officers for the other two surveys are also located in the Division of Epidemiology and Statistical Analysis.

HEROIN-RELATED DEATHS IN BALTIMORE, MARYLAND

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This study of heroin overdose deaths in Baltimore, Maryland is, in part, an attempt to replicate a similar study of overdose deaths in the District of Columbia.

In that study a substantial increase in the number of deaths attributed to intravenous heroin use beginning in the second quarter of 1979 was noted.

Initial findings from the study were presented to the CCG at the Atlanta meeting in December of 1981. A summary of the findings were published in the Morbidity and Mortality Weekly Report in July of 1983.

For purposes of the D.C. and Baltimore studies, the following definitions were used. A case is a death in which there was morphine in the blood, bile, or urine and the death was attributed to narcotism. Deaths in which other narcotics alone or in combination with morphine were excluded. The control group consisted of persons who died of natural or traumatic causes including homicide and suicide and had measurable concentrations of morphine in their blood.

In the District of Columbia, mean age of the decedent was 30 years old; 93 percent were black, and 82 percent were male. The deaths were clustered in the spring and summer, with 58 percent of the heroin-related deaths (HRD's) occurring from the period May to September. The deaths also tended to cluster on Friday and Saturday between 6 p.m. and midnight. Seventy-three percent of the cases versus 32 percent of the controls were positive for alcohol with 50 percent of the former and 14 percent of the latter having blood alcohol levels exceeding 100 milligram percent. In contrast, the percent positive alcohol in heroin-related deaths in the District of Columbia for the period 1971-1979 was 37 percent. Because of the concentration of deaths on weekends, it was suggested that the deceased, might in fact, not be regular heroin users but perhaps former users who began using occasionally as the availability and quality of heroin increased.

It was also noted that the concentration of quinine in street heroin had increased during a time in which HRD's were also increasing and thus, it was suggested that quinine itself might be a factor in the deaths.

The D.C. study suggested several hypotheses. One, that deaths might be due to an interaction and or synergistic reaction might be occurring between heroin and alcohol or heroin, alcohol and quinine, and two, that the heroin related deaths may be occurring in a population that may not be "classic" addicts.

It is known that both heroin and ethanol can cause alterations and cardiac conduction and rhythm and pulmonary edema. Since quinine can also cause a reduction in conductivity, pulmonary edema, as well as other cardiovascular effects, it is plausible that the three drugs, may in fact, be acting additively or synergistically. It is known that at least in mice, quinine and heroin are additives producing pul-

monary edema. In relation to the second hypotheses about the potential for recreational or intermittent use of heroin, a survey of drug use patterns of the decedents is planned both in the District of Columbia and Baltimore, Maryland.

Initial plans called for the study to be replicated in Baltimore, where quinine is used in cutting heroin and in Los Angeles, where quinine is not used. One advantage of conducting a study in Baltimore is that the Baltimore Medical Examiner's Office quantifies blood quinine, whereas the District's Medical Examiner's Office does not.

The initial results of the Baltimore study are similar to those found in the District (Table 1). Between 1980 and 1982, there was a doubling of heroin-related deaths. There were 24 deaths in 1980, 22 in 1981, and 54 in 1982. More than 80 percent were black males. The mean age ranged from 29 to 31 with males tending to be older than females. In 1982, for example, the mean age for males was 30 versus 25 for females. More than 80 percent of the cases versus about a third of the controls had positive blood alcohol levels.

It was also interesting to note that when cases with zero alcohol were removed, 64 percent of the heroin-related deaths in 1982 occurred either Thursday, Friday, or Saturday.

Although analyses of these data are just beginning, a couple of interesting questions have already been raised. For example, although the number of deaths in 1982 is more than twice that for 1980 and 1981 combined, the percent of positive alcohol cases was similar over all three years. Thus, the increase in deaths cannot be explained solely on the interaction of heroin and alcohol. Part of our analysis will include analyzing heroin concentrations where ethanol is present versus heroin concentrations where ethanol is not present, and looking for changes in blood concentrations of heroin, ethanol, and/or quinine over the three year period 1980 through 1982.

Table 1
Comparison of Heroin-Related Deaths in Baltimore
for the Years 1980-1982

	<u>1980</u>	<u>1981</u>	<u>1982</u>
Number of cases	24	22	54
Percent Male	83	95	80
Percent Black	96	90	80
Percent White	4	10	20
Mean Age	29	31	29
Percent Alcohol Position	75	86	81
Mean Alcohol Concentration in milligram percent	0.15	0.16	0.14
Number of Control	10	18	21
Percent Male	100	94	86
Percent Black	100	89	85
Percent White	--	11	5
Mean Age	29	29	27
Percent Alcohol Position	20	44	33
Mean Alcohol Concentration in milligram percent	0.27	0.12	0.02

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THE ILLICIT DRUG SITUATION THROUGH SEPTEMBER 1983—AN OVERVIEW

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Southwest Asian heroin continued to dominate the illicit market through June of 1983, while Southeast Asian-source heroin maintained the increased share first noted during the first quarter of 1983. Overall levels of heroin abuse and availability appear to have stabilized at 1982 levels, which were substantially above those reported in 1981.

All available indicators of cocaine abuse and availability suggest the continued high levels reported during 1982. Since March 1983, there has been substantial evidence of an oversupply of cocaine, with a consequent significant decline in wholesale prices in selected cities; recent data show that the decline in price is beginning to be manifested at the retail level.

In regard to dangerous drugs, methamphetamine abuse and trafficking have remained stable. The use of oral dosage forms of amphetamine has declined. The trend of diminishing availability and abuse of methaqualone, noted during 1982, has continued in the same pattern. PCP availability and abuse, which increased in 1982, has continued to accelerate in 1983, contrary to the downward pattern of 1979-1980. The abuse of pharmaceutical substitutes for heroin is relatively stable although there has been a slight shift in preferences from pentazocine (Talwin) to codeine preparations and hydromorphone (Dilaudid).

General Market Description

The illicit drug market in the U.S. has been characterized by:

- Stabilized or slightly declining heroin availability compared with 1982
- Increasing market shares of Southeast Asian-source heroin, particularly on the East and West Coasts
- Increasing significance of heroin supplies from Pakistani rather than Italian-French sources
- Continued high levels of cocaine production and trafficking from Colombia resulting in a decrease in wholesale prices
- Continued diversity in the marijuana market with domestic, Jamaican, Mexican, and other sources competing with the commercial Colombian product resulting in depressed prices for the Colombia commercial product at the wholesale and retail level;

- Slowly declining use of the heroin substitute pentazocine due to reformulation, other heroin substitutes remain popular;
- Continued high availability and abuse of methamphetamine with record levels of clandestine "speed" laboratories being immobilized;
- Reemergence of the amphetamine analog, MDA, as a significant drug of abuse and an increase in the illicit manufacture of MDA;
- A continuing epidemic of PCP abuse in Los Angeles, New York, and Washington D.C., with high levels of use also reported in Chicago, Detroit, and Philadelphia. Clandestine PCP laboratory seizures continue at 1982 levels with a significant number of seizures in the Washington, D.C. area;
- A continuing decline in the availability and abuse of methaqualone due to a shortage of bulk methaqualone in the international traffic. The domestic methaqualone market continues to be dominated by counterfeits, primarily composed of diazepam;
- Declining availability and abuse of oral dosage forms of amphetamine, and;
- Preliminary indications of renewed trafficking and abuse of peyote and psilocybin (mushrooms). These organic hallucinogens were popular in the late '60's, but have not been widespread for the last ten years.

CHANGES IN THE GLOBAL MARKET STRUCTURE FOR ILLICITLY CULTIVATED DRUGS: AN OVERVIEW OF THE PAST 20 YEARS

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This paper provides an overview of changes in the global market for illicitly-cultivated drugs over the past 20 years and discusses some implications of these changes.

In the past 20 years, the United States has experienced complex trends of drug abuse which include:

- Substantial increases in the absolute rates of abuse of the illicit drugs: marijuana, heroin, and coca products
- Changes in normative behavior within different social classes and population sub-groups, as abuse of different types of drugs gains varying degrees of acceptance and is widely tolerated
- Shifts from single to poly-drug abuse, including abuse of psychotropic drugs
- Variability in local consumer trends
- Substantial increases in narco-dollar expenditures

Within the same 20-year period, the global market structure—defined for purposes of this discussion as the three components of **production**, **traffic**, and **consumption**—also has changed, to an extent, as a function of sustained supply/demand activity.

Changes In Production

Production of marijuana, heroin, and cocaine has increased manyfold, sometimes to meet demand, sometimes ahead of demand. While steps to control production were successful in Mexico and Turkey, political-economic dynamics have resulted in illicit drug cultivation becoming entrenched in areas where a variety of factors pose impediments to crop reduction. Although the configuration of impeding factors varies from country to country, the set of factors includes:

- An almost universal failure by governments to recognize illicit drug cultivation as a problem and to intervene before it becomes entrenched; a similar lack of awareness of the dangers of future domestic consumption of illicit drugs as a function of increased availability.

- Overseas, the profits to below-subsistence farmers, which may be three to five times greater than those for licit crops, attracts large numbers of farmers to illicit drug cultivation.
- As a correlate to the above, governments of illicit drug agro-producer countries frequently lack viable economic development plans and programs, including product marketing, which can compete with the drug trade.
- Illicit drug cultivation tends to become most deeply rooted in areas which are outside of the government's direct political control.
- In many cases, cultivation of drugs for illicit use is defended with arguments originated to defend traditional and/or religious use. Examples: Opium in the Golden Triangle was a traditional barter medium and is used as an analgesic; coca chewing in the Andes is a normative aspect of Indian life; Jamaican Rastafarians use ganja within a religious context.
- For cocaine and heroin, chemical processing methodology has been disseminated to operators close to the farm-gate and they now can produce high-potency, consumable intermediate drugs such as morphine base and coca paste. Because they are portable, transport into trafficking pipelines is made easier, facilitating local consumption.

Changes In Trafficking

Trafficking has increasingly become "big business." The economic attractiveness of narco-trafficking is reflected by two changes toward both increasing organization of vertical and horizontal trafficking networks, and increasing numbers of "white collar" entrepreneurs venturing in trafficking.

Modes of trafficking have become increasingly diverse, ranging from multi-ton marijuana loads in motherships, to smuggling through commercial shipping, to one-time use of planes for shipping cocaine, and even smuggling in body cavities by "mules," i.e., paid carriers. (Several dramatic overdoses have occurred when cocaine-filled balloons, often prophylactic condoms, burst while still within the "mule's" digestive tract.) Expectedly, traffic interdiction is difficult and, at best, will stop only a fraction of the total.

Phenomena which are correlatives of trafficking have also become widely distributed. A quantum leap growth occurs in corruption—from local enforcement to the upper echelons of government—as traffickers amass wealth at a rate substantially greater than that of their developing countries. Developing countries' economies may be diverted, most pronounced in South America, from investment in basic infrastructure development to consumption of imports and real estate speculation to launder narco-dollars. The risk of political destabilization exists due to the involvement in trafficking of insurgents and groups with interests inimical to those of the country. Trafficking is a low-investment, low-risk means of raising money for weapons, etc.

Changes In Consumption

World-wide consumption of cannabis products (hashish and marijuana), coca products (coca paste and cocaine), and concentrated opiate products (morphine base and heroin) has increased.

In the United States and, with a variable lag time in specific countries, Western Europe use of all three drug categories has increased. The countries have incorporated treatment and prevention of illicit drug abuse into their national health policies.

Proportionately hardest hit by drug consumption, however, are not the developed countries. Except when illegal organizations completely control throughput from production to export, **consumption of drugs in producer and proximate transit countries is a concomitant of production and trafficking.** Frequently drugs are available at high purity and low cost. Heroin addiction has long been well-established in South East Asia and parts of South West Asia and is epidemic in Pakistan. In the Americas, coca product consumption has been spreading, signaling what may become a regional epidemic.

The Implications Of Changes In Production, Trafficking, And Consumption

Given the past pattern of sustained—indeed growing—supply and demand of marijuana, cocaine, and heroin, it is appropriate to explore current and future implications in a global context.

Implications Of Sustained Production

Countries unable to control production eventually face hard choices, whether they continue to tolerate production or try to reduce it. Some implications are:

- Producer countries will be increasingly vulnerable to international pressure to reduce production, without a concomitant commitment to guaranteed continued income levels for farmers. Farmers with frustrated expectations can be expected to be a major political problem, perhaps a greater one after a drug-boom than before.
- Given no external constraint on production and having no forecasting information, illicit drug cultivators intermittently will tend to exceed demand, creating lower prices and a potential for increased initiation into use.
- Recognizing the mushrooming problems resulting from delayed action against early illicit drug cultivation, the international community will be increasingly moved to be vigilant and prepared to take preemptive, perhaps draconian, early measures.

Implications Of Sustained Trafficking

Overall, trafficking has evolved both toward greater decentralization and proliferation of trafficking networks. The concomitants of corruption and political destabilization affect producer countries. Some implications of continued sustained trafficking are:

- Trafficking increasingly becomes a national/regional security issue.
- Countries are faced with the need to introduce new legal concepts and laws to overcome legal impediments to investigating and prosecuting traffickers, i.e., seizure of assets from illicit drug trafficking, conspiracy laws.
- The international community will be increasingly forced to cooperate on measures against trafficking. International frustration increases pressure for strong measures against production.

Implications Of Sustained Consumption

Drug abusing behavior continues to spread in much of the world. Implications of continued, sustained consumption are:

- Once established, drug consuming populations—especially of high-dependency-producing drugs—may remain social/health/security problems far into the future, relapsing and switching from drug to drug.
- In producer countries, local consumption may underwrite production costs. While reducing the amount of drugs available for export, this may also reduce the economic risk of exports and guarantee continued production, even in the face of improved export controls.
- High levels of consumption of illicit drugs, especially as the sequelae to both acute and chronic use accumulate and become widely known, will stimulate demand for countries to implement effective policies. These may seriously drain available resources. Failing to implement effective policies, however, the country will suffer disruption. Selection of a viable policy will include resolving the occasional contradiction between a policy which is philosophically appealing and one which works.

ABUSE OF HEROIN AND COCAINE

Fredericka Homberg
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COCAINE

Data obtained from the Narcotics Unit of the U.S. Department of Justice in New Orleans indicates a large increase in the amount of cocaine on the streets and, a corresponding decrease in the price reported for a kilo of cocaine in the Gulf Coast Region of Louisiana—from \$55-\$70 thousand to \$30-\$35 thousand. In terms of the street level price, a quarter of an ounce of coke sells for \$500-\$600 with a quality level reported at 40 percent. With regard to 'busts' for cocaine, a problem reported by authorities was that some individuals were putting cocaine into balloons and swallowing the balloons. This created a problem of how to obtain the cocaine. The solution selected for this problem was that these individuals were sent to Charity Hospital and given laxatives. All of these individuals have been convicted.

HEROIN

Around 1975, heroin's presence on the streets of New Orleans began to dwindle. A large-scale heroin ring called 'Operation Top Cat' was busted resulting in convictions of life sentences for about 25 individuals. Following these convictions, heroin disappeared from the streets. This decrease in heroin, however, can not be attributed solely to the disbandment of Operation Top Cat as, also during that time, heroin was being replaced by Dilaudid and the combination of Talwin and Pyribenzamine (T's and Blues). Recently, there has been an influx of white heroin from Mexico into New Orleans. Reports also indicate that heroin is entering the city in any way, shape, or form (e.g., suitcases, body packages) from Bolivia and Peru.

Currently, it is being reported that people are smuggling heroin and cocaine through the airport. Generally the scenario being seen is that two individuals are getting on a plane in La Paz, Bolivia with flight manifests indicating that their tickets were purchased at the same time. The "mule," as one of these individuals is called, comes in, picks up the suitcase, and is, of course, busted. If the customs inspectors are on their toes, they look at the flight manifest and find out who the other individual is for secondary questioning on a border-type situation. Two problems arise in these situations: first, the second individual, who is obviously the heavy with the responsibility for both picking up the cocaine once through customs and for further distribution of the drug, is not always picked up before s/he leaves the airport and, secondly, there is the problem of how do you prove a case against that individual—there is just not enough information to convict him/her.

MARIJUANA

The importation of marijuana into New Orleans is a major problem, particularly as most efforts are focused on South Florida. Because these law enforcement endeavors for Florida are so vast, it is like pouring money and personnel into a black hole. And, ironically, because all the attention is focused there, there is a lot less importation to Southern Florida. A good reason for having a boatload of marijuana come into Southern Louisiana, however, is that the coastline is perfect for it. There are a lot of bayous and tiny inlets which are great hiding places to off-load marijuana. An added factor which comes into play is very simply recession. Many of the oyster fishermen and shrimpers who have been using their boats for importation would never have gotten into the marijuana trade except that they had to make their bank loans. Once they make one or two loads and get into the business, they discover how lucrative importing marijuana can be. Last year, for instance, an entire family of brothers was convicted. They were oyster fishermen and when the prices for oysters were down, and the market was bad, they got heavily into the marijuana trade. Every one of them was convicted.

Although marijuana is still coming in from Columbia, reports indicate a good bit is coming in from Mexico. The two major ways that marijuana enters New Orleans is by boat and by plane, as the little country towns north of Lake Pontchartrain have fields that make good places to land a plane and in the outlying parishes, there are a lot of little airstrips. A method that is being used to expose these cases is, an undercover agent, along with his crew, goes into the area as a farmer or a "good ole country boy." He is paid by the dope dealers to set up a landing strip or an off-load site for a boatload. He will definitely supply the off-loaders although he may or may not supply the trucks and the truck drivers who will deliver the marijuana to sites where it is taken to be broken down into smaller units and shipped north. The seizures that have resulted from these efforts, however, have produced a storage problem for the Narcotics Unit—"they can't get rid of the stuff fast enough." It costs a lot of money to store this marijuana and, as it draws rats, it is dangerous from a health point of view.

A new program being implemented that is expected to have an impact on the importation of marijuana is called NIMBUS. Mostly an information gathering activity, this program is a coordination effort between the Coast Guard and the other military branches. The way it works is that if an Air Force reservist is flying a mission, he is told to keep an eye out to see what type of boats are coming into the area and from where. This information is then put into a data base with the intent that the boat or plane that is entering and carrying illegal substances will be caught.

PCP

Another substance that's use and availability is on the upswing is PCP or Angel Dust. Many plants that manufacture this substance have been discovered in Louisiana, Texas, and Oklahoma. Originally, PCP was characterized and used by middle-class college students as a cult drug, however, this pattern has changed and PCP is now becoming both popular and widely-used among all strata of society and all ethnic groups. A lot of crime in New Orleans is being attributed to this increased use (from murder and rape to armed robbery) as when people get 'hopped up' on PCP it causes them to become extremely violent.

T's AND BLUES (Talwin and Pyribenzamine)

New Orleans was one of the first places where T's and Blues became popular. Recently, however, reports indicate that a lot less of this combination is being seen. Two reasons have been noted for this decline:

- Heroin is returning to the drug scene, and the combination of T's and Blues was really a replacement for heroin.
- Naloxone, which has been added to Talwin, takes the kick out of the drug.

DILAUDID

A drug that was considered a real 'biggie' as a replacement for heroin in New Orleans was Dilaudid. Various types of Dilaudid cases were being seen by the Narcotics Unit—doctors were over-prescribing the drug, pharmacists were 'losing' the tablets, and a lot of ex-heroin addicts were being prosecuted for possession. Two explanations have been identified for the recent decrease in Dilaudid cases.

- A lot of pharmacies absolutely will not sell any more of this drug. People that legitimately need Dilaudid are required to go to hospital pharmacies where the hospital knows the doctor. Even if the pharmacy stocks Dilaudid, there is almost no pharmacy that will fill a prescription without first calling a doctor.
- Doctors are refusing to prescribe it—you have to really be in pain to get a Dilaudid prescription as it will immediately raise a red flag. If a doctor prescribes a lot of Dilaudid, it hits the pharmacist, the pharmacist questions it, and it comes to the attention of the State Police Unit that investigates registrant cases.

As a result of these two situations, there is not much Dilaudid available on the streets. The drugs that are being seen, however, include Preludin, Desoxyn, Ionamin, and Fastin. The source of these substances appears to be doctors who are either over-prescribing or mis-prescribing.

With regard to "registrant cases" being uncovered by the Narcotics Unit, there has been tremendous success with convicting doctors. These cases, which are not considered malpractice cases, are all prosecuted on the Federal level because they are complicated and expensive to prosecute—there is a need to hire both pharmaceutical experts and doctors who must, in their testimony, explain common practice. The agency that makes the case, however, is the Diversionary Investigative Unit (DIU) of the State Police Department. These prosecutions have required cooperation between the State and Federal governments—the agents work together and teach each other instead of having a lot of people doing isolated investigations. In terms of the sentences being given in these cases, traditionally, judges gave 'dope addicts,' with real problems, 15 years and gave the doctor who caused the problem two years. Some of that is being evened out with the doctors now receiving heavier sentences of seven to eight years. The typical scenario in these cases is—the individual goes to the doctor, no medical history is taken, the patient is not weighed, there is no discussion of either a diet or diet plan—simply, the patient says, I want a prescription of Preludin. (Preludin will be

prescribed for a period not to exceed 60 days, as it is a schedule two drug and has a high capacity for abuse.) The individual will then return in 15 days instead of 30 days and receive a prescription for another 30 days. This practice will continue until it starts becoming obvious, at which point the doctor will switch the patient to Fastin or Ionamin. Most of these cases occur in the suburbs and not in New Orleans proper. They are not your standard housewife wanting to lose 15 pounds for her daughter's wedding. Undercover agents are finding that these are truck drivers that need a little 'hop' to stay awake on the road. Five physicians were convicted recently--one was seeing 450 patients a day. The Narcotics Unit also has seen a few dentists and the same scenario. Although originally these doctors were over-prescribing Dilaudid, the medications now being mis-prescribed are Preludin, Desoxyn, Fastin, and Ionamin.

PRESIDENTIAL TASK FORCE

The Presidential Task Force, a new program being instituted nationwide, was initiated a couple of years ago in South Florida. Because of its success, there are now units being established in other areas throughout the country. The concept for the New Orleans program is to cut off the money flow. Historically in New Orleans when someone was busted, the authorities would bust the buyer, convict the buyer, at post-conviction 'flip' the buyer (make the buyer tell who their source was), and work up the trail. Presently, there is a broad-based, wide-ranging method in place for investigating and prosecuting narcotic traffickers--you examine taxes, so you work with the IRS, you look at financial sources, so you work with at the banks. In other words, when somebody brings in a boatload of marijuana, you ask them:

- Where did you get the money to do it?
- What bank did you use?
- Where are your bank accounts?
- Can I see your tax returns from last year?

The premise on which this method is based is you determine the source of the money and cut it off. It is too early to tell whether or not this program is going to be successful.

Another approach to the problem with drug smugglers is through a heavy involvement in property seizures. For instance, if you make a million dollars by selling marijuana, and you invest it in a farm, the authorities will trace the purchase money back to dope money and then seize the farm. An attempt is being made to have a lot more coordination between the New Orleans' Attorney's Office and the Alabama Attorney's Office. The success of these seizures will also depend upon a great deal of cooperation between the State and Federal governments.

YOUTH AND DRUGS

Viola Watson

**Chairperson, Mayor's Task Force on Youth and Drugs
Substance Abuse Prevention Regional Coordinator**

The Substance Abuse Prevention Education Program (SAPE) is the only State mandated program which specifies that, "Within every public school, in every parrish (county) in the State of Louisiana, there shall be a group of trained persons to deal with the subject of substance abuse. Within every elementary school in the state and within every secondary school there has to be a team of persons who are trained in substance abuse education." This requirement--Act 546--was enacted during the 1980 State legislature. Ideally, the SAPE team within the schools will include an administrator, a counselor, a nurse, a social worker, a few teachers, some interested parents and some non-professional personnel (e.g., bus drivers, security persons, custodial workers, cafeteria personnel.) In other words, people who are genuinely concerned about young people and have a good rapport with them. The SAPE regional coordinators, who act as the liaison between the community based group, the parent group, and what occurs in the schools are responsible for training the SAPE team. This team is brought in for 18 hours of substance abuse training. The individual parrishes and the state arrange for both teachers on the team, and other people who are certified, to be given "Professional Improvement Points" (PIP) for being members of the team and for coming in for the training. Those individuals who do not fall into this category will receive certificates of training which, according to their professional specialty, can be used towards continuing their education. The state will provide funding for release time and substitute teachers. The objectives of the SAPE program are:

- **PREVENTION**--The SAPE Program operates on the belief that education is the key to turning young people around from becoming actively and harmfully involved in drugs. Consequently, the state health and physical education curriculum now include much of the information that was developed for the SAPE Program.
- **IDENTIFICATION**--Identifying a substance abuser includes the intervention and referral of those young people who are involved in using drugs. To facilitate this process, a behavior checklist, which identifies distinct behavior changes, was developed for use within the schools. Once this checklist has been completed, the parents are called in, the information is shared with them and, if necessary, referrals are made. These young people may be referred through an outpatient program to a substance abuse clinic, through the mental health clinics to an inpatient program, or to a new concept in New Orleans, the day care program. This program is free of charge and is designed for young people who are harmfully involved in drugs. The young person in this program reports to the center at 7:00 a.m. and

will remain there until 5:00 p.m. at which time s/he will return to his/her family. Each individual follows a treatment modality based on Alcoholics Anonymous while simultaneously receiving at least two hours of school training from a certified teacher (ensuring they will not lose out on their regular school work.) The program operates on a volunteer basis, but must be attended for a minimum of two months.

- **SUPPORT**—This program is also designed for young people who are harmfully involved or who are living in families where there is usage. In this regard, support groups, including after-care groups for young people who are returning from treatment centers, are organized through the school. This support group of people understand what an individual has been through and the kind of problems s/he is experiencing in trying to adjust to a so-called "normal" school situation again. In addition, there is a concerned persons group for young people who are not actively involved in drugs themselves but might have a family member or boy/girl friend who is using. The SAPE Program also sponsors an awareness group, called a 'rap group,' for kids right on the borderline of using and who want information. In addition to these three programs, there are SAPE clubs and also the Mayor's advisory council which is a community based group that brings together young people from the public sector as well as the parochial and private sector.

This Substance Abuse Prevention Education Program is managed by 16 coordinators across the State of Louisiana. These coordinators' number one priority is the public school system, but when invited, they will go into the private and parochial schools. When the program was initiated during the 1980-81 school year, there were nine pilot teams across the state. As of September, 1983, there are approximately 700 SAPE teams and the idea continues to catch on throughout the state.

With regard to the drugs that currently are being abused by this population, the main difference in the drugs of choice are between those kids who are in the inner-city schools who tend to stick to alcoholic beverages, particularly wine or beer, and marijuana, and the kids in the suburban schools, who feel they are more sophisticated and prefer name brand alcoholic beverages as well as quaaludes and cocaine. Concern is being expressed as many young people are getting into non-prescription type substances that are easily at their disposal. For example, a new term being heard in the schools is "getting whited out." What they are doing is buying bottles of liquid paper and sniffing the liquid paper. They wipe it in the palm of their hand, let it dry, and then take their fingernail or the back of a pencil and scrape it up their noses. Therefore, the SAPE program has realized the necessity for educating students on the dangers of becoming involved in the abuse of liquid paper. Young people are also getting into the PAM type sprays. They saturate a rag or a piece of cotton with the vapors and bring it to school in a brown paper bag. Morning glory seeds are also being abused by students. Particularly Heavenly Blue seeds which contain a natural derivative of LSD, so that when the kids want to go on an LSD trip, they chew the Heavenly Blue seeds or make a tea from them. Students have also found that when spices in the kitchen (e.g., nutmeg, cinnamon, allspice) are brewed in very strong tea, it can put you in a drunken stupor. Also cited for abuse are "hot toothpicks" which are made by taking regular wooden toothpicks and soaking them in cinnamon oil. The danger, however, is that if you consume an equivalent of approximately one tablespoon of

cinnamon oil, you run the risk of going into a coma or convulsions—a fact, of which kids are not aware. Some of the schools are also noting that ground up glass is being mixed with cocaine so kids are seeing the sparkle and snorting it. Another concern is the use of "Clickers" where marijuana is soaked in some kind of embalming fluid or "Shermans" where marijuana joints are soaked in an angel dust type solution. So, SAPE energies are being focused in the area of educational awareness—assisting young people in becoming aware of the possible risks involved in abusing substances found around the home.

Another observation in Louisiana is an increase in the number of adolescent chemical dependency units. It is speculated that the creation of these units is indirectly, if not directly, a result of the educational awareness and the ability to identify young people who have become harmfully involved. Four years ago there were approximately two or three identified programs that were able to treat young people who had become dependent on drugs. Presently, there are 14 or 15 inpatient, outpatient, or day care programs right in the city. Some of these are State-funded, but many are private.

In the area of prevention, there are many primary prevention programs that operate in the city under the auspices of the Department of Mental Health and Substance Abuse. Many of these programs are concerned with such issues as self-esteem, decision-making, and peer pressure. SAPE coordinators have sat down with the individuals responsible for the health and physical education curriculum at the State level and broken down the information developed for the program so it could be spread throughout the grades—from the first grade up to and including the twelfth. All of the various activities that a teacher could use in the class (e.g., AV materials) are incorporated into that curriculum.

The SAPE Program is also responsible for running contests in the schools in which the homeroom gets together as a team and, based on a specific question (e.g., tell me the different things you can do to get a natural high) come up with a list. Whichever class comes up with the longest list will receive a gift certificate from an area business.

For further information on the Substance Abuse Prevention Education Program (SAPE) you can write to:

Mr. Joseph Cotton
State SAPE Coordinator
Louisiana State Department of Education
Bureau of Student Services
P.O. Box 44064
Baton Rouge, Louisiana 70804

DRUG ABUSE PREVENTION: A CITY'S RESPONSE

Carol F. Bebel
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PREVIOUS ROLE OF THE CITY IN DRUG ABUSE

For the period of 1974 to 1981, the city of New Orleans held a very prominent role in the drug abuse prevention, treatment, and rehabilitation network in New Orleans. The Bureau of Drug Affairs (BDA) was the city's agency for planning, coordination, and administration of this network. Supported primarily by city funding, the BDA received some Federal (National Institute on Drug Abuse/NIDA) and State (Single State Agency/SSA) funding. Due to this unique status, the BDA was the pivotal source of funding for most drug abuse programs in New Orleans.

After a primary contract was executed between the State and the city, several subcontracts by the city were executed with area drug abuse prevention and treatment programs. The BDA then monitored and evaluated the work of these subcontracts.

In 1981, as a result of significant State reorganization and funding cuts, the city made the decision to restructure the local network. As a result, the BDA assumed a less prominent role in drug abuse prevention and treatment.

CURRENT ROLE OF THE CITY IN DRUG ABUSE

From 1981 to mid-1982, the city's role in drug abuse has been essentially supportive and cooperative with the free standing non-profit and hospital-based agencies in the community. Participation with national efforts to shape urban policy in the drug abuse area were also continued. The former BDA Director continues to sit on the National Drug Abuse Advisory Council and the city remains a member of the Community Epidemiology Work Group (CEWG).

In July of 1982, Mayor Ernest N. Morial established a Mayor's Advisory Council on Youth and Drugs to develop strategies for combating the problem of youthful drug abuse in New Orleans. This represented a resurgent role for the city with drug abuse prevention. The council combined some 40 members, representing business, education, government, prevention, treatment, and law enforcement.

During the first year of the council's existence, a review was made of existing efforts in New Orleans to determine an appropriate role for this newly-formed council. The council was able to encourage better cooperation among drug abuse prevention efforts for the celebration of 1982 Drug Abuse Prevention Week. The Ad Council of New Orleans developed and sponsored an advertisement which began to air on television.

In 1983, the council became more actively involved in the implementation and planning of prevention activities. Two advertising pieces were done, one featured Stevie Wonder with about 30 kids. Stevie wrote lyrics and music for this commercial as a volunteer contribution. Additional to the donation of Stevie's time and

talent, were studio time, technicians, and equipment. The theme of this commercial was "Get High on Yourself." Another advertisement was developed which warns parents to watch the example you set, as a little girl watches her parents and their friends smoking marijuana and then begins to imitate them.

The major council activity planned this year was a 1983 City Wide Conference, the first ever held in New Orleans. In September, a call to participate was issued to all parochial, private, and public high schools. A Saturday meeting was held with 125 students representing over 25 high schools in New Orleans. The Mayor addressed the group and the students were very willing and eager to participate in the planning and implementation of the conference.

The council's rationale for convening this conference developed from an appreciation of the great wealth of energy and creativity which exists among the youth of our city. But more importantly, acknowledged the existence of a significant population of kids who reject the drug abuse ethic and are willing to go on record encouraging others to reject drug abuse.

The actual planning of the conference was achieved by subdividing young people into groups representing:

Awards	Hospitality
Church	Logistical Support
Dance	Media
Transportation	Music
Drama	Security
Graphic Arts	

These groups were staffed by volunteers which included area artists, the business community, and council members. The students did much of the actual work and enjoyed it. They met for eight weeks on weekends and evenings and as the conference time neared, students worked every evening until 8 and 9 o'clock making calls, stuffing envelopes, etc. Students raised money, solicited contributions, wrote press releases, etc.

Conference weekend soon came. Friday night a multi-media show called "Dreammaker" was shown and an area news reporter addressed the group. Saturday, small group sessions were held lasting from morning to early afternoon. The afternoon was left open for rehearsals and final preparations for Sunday activities. Ecumenical services were held Sunday morning followed by a reception for guests and the students. The conference high point was the afternoon program which featured the talent of New Orleans youth.

The students are ready to get started on next year's conference. Importantly, a school-based youthful leadership has been established.

INCIDENCE OF OPIATES AND OTHER PSYCHO-DRUGS AND PROFILES OF USERS AMONG YOUNG CONSCRIPTS OF THE YEAR 1982

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1. INTRODUCTION

1.1 Premise

Two years after the conclusion of the first research conducted in Italy on the national level on the incidence of opiate abuse among the young (1.2), the same public institutions (I.S.S. and C.N.R.) have started a corresponding investigation in various urban areas in 15 Regions, including, besides opiates, cocaine and THC (hashish, marijuana).

This investigation was commissioned by the General Office of Social Medicine Services of the Ministry of Health within the framework of the finalized project "Biomedical Technologies" of the C.N.R.

The Direzione della Sanita Militare (Chief Military Health Office), the COMILITER, and the draft boards of the areas involved actively participated in the project.

1.2 Goals, Significance, And Limits Of The Investigation

In accordance with the indications given in the parliamentary speech by the Minister of Health (3), the investigation is aimed at:

A. Regarding Opiates

- Determining the trend, after two years, of their spread in these areas;
- Determining the predominance of users in other areas which, for various reasons, appear to have a particular relevance of interest;

B. Regarding non-morphines, determining the prevalence among young males of:

- Cocaine users in areas where its use, according to some indirect sources, seems to have reached levels which give cause for concern;
- Marijuana and hashish users in the major urban areas;

C. Determining the percentage of polydrug users among opiate users;

- D. Producing an estimate of the distribution of tobacco smokers and consumers of alcohol through a parallel survey of the entire population examined.

From the combined results of this research, we believe that a sufficiently correct real map of the distribution of drug abuse in our country can be drawn.

In the opinion of the authors, the most significant fact about this map is its objectivity which is assured both by the methods used in collecting the data and the nature of the determinations.

The limits of the investigation can be estimated from the following considerations:

- (a) The data gathered here can be considered with regard to amount and completeness only as good points of reference for a description of the drug phenomenon among 18-year-old males and as discreet elements for an attempt at general projections to be correlated with other available data;
- (b) The comparisons with 1980, in the areas where they are possible, cannot be considered equally representative for all areas due to some differences in the composition of the sampling in the two investigations.

The results offered in this report represent the first data concerning opiate users among the young people within the whole population group sampled and the areas corresponding to those investigated in the first TO.DI. (2) project.

Furthermore, results are reported on users of other psycho-drugs and on over 8,000 subjects in nine areas for cannabis use and on all users of opiates among the multidrug users.

2. MATERIALS AND METHODS

2.1 Sample Selection

Regarding the criteria of selection, we refer to the description in a previous report (2).

The investigation involved in various ways the youth of 15 Regions where drug abuse seems particularly virulent.

Thus, the following areas were examined: most extensively in Lombardy, Friuli-Venezia-Giulia, and Umbria; to a lesser degree, concentrating only on limited high-risk areas, in Piedmont, Veneto, Liguria, Emilia-Romagna, Tuscany, Lazio, Campania; and only to a much lesser extent in the other Regions.

2.3 Collection And Conservation Of Samples And Dosage Of The Various Drugs In The Urine

As part of the induction routine, urine samples are collected from all subjects to detect any presence of glucose indicating diabetes. For the TO.DI. investigation, part of the sample was transferred to hermetically sealed containers which were then labeled with a random number, a copy of which was attached to the previously compiled questionnaire to allow matching the result of the test for the

presence of the various psychodrugs in the urine to the personal characteristics of the subject (Table 1). The samples thus collected were stored in cool places at the draft board location, from where they were periodically transferred to the I.S.S.

The samples marked in this way were then stored in suitable places at the Institute at a temperature of 4-8 degrees C, from where they were withdrawn for analysis.

- A. The determination of the presence of opiates (and their metabolites) was made by the RIA method (radio-immuno-assay) using morphine marked with ¹²⁵I ("Abuscreen"—ROCHE DIAGNOSTICS) and measuring the gamma radiation in the bound fraction (B/T) (automatic "Gamma Counter—1270 Rack Gamma 20" LKB) according to the procedure described in (4) and adapted to the objectives of this research.

In this connection, the considerations already made in (4) on the validity of the value of 10 ng/ml as a sufficient limit to exclude most errors and thus to establish a threshold for the determination of the number of opiate users independently of the state of addiction is confirmed.

- B. The determination of tetrahydrocannabinols (THC) and their metabolites was made by the EMIT-DAU Cannabinoid Urine Assay—(SYVA—Palo ALTO, CA, USA. Bracco Industria Chimica S.p.A. SYVA Automatic Sampler AC 5000—Bracco Industria Chimica S.p.S.) method which is based on the variation of optical absorption correlated with the reduction of the NAD to NADH caused by the MDH enzyme.

For cost and time reasons, the sampling was limited to the most representative and restricted areas of the whole.

- C. The determination of the other psychodrugs was made with RIA techniques and concerned the following substances: amphetamines, barbiturates, and cocaine.

Counterchecks of the positive samples with other methods than RIA and reference methods (GC/MS and HPLC) are being conducted.

3. OPIATE USERS

3.1 General Data

A. Profile Of The Sample Population

The sample population consists of the young men entering upon their first military training for about 30 days within the first five months of 1982.

The diagram of the periods in which the samples were taken in every draft board group is shown in Table 1.

In order to allow the results to be used coherently with the collection criteria used by other sources, the place of residence of the subjects was reported to the community by ZIP code.

The analysis of the samples under the various aspects (age group, education, place of residence, marital status, job situation, professional status, life style, age and condition of parents) is reflected in tables 3-15 (columns relative to the subjects examined).

In the distribution by age group of the subjects examined, the group up to 18 years of age constitutes almost 90 percent (of whom one-fourth are minors) on the national level (Table 3), with perceptible variations on this average, in the Regions and communities.

Regarding the educational level, the figures show that a little less than one-tenth (more than 8 percent) are dropouts, while 91 percent have finished their obligatory education or are now finishing high school (Table 4).

A little less than two-thirds of the subjects (over 60 percent) live in the suburbs, and only 39 percent in the center cities. Almost all are unmarried (99.2 percent) and live with their parents (96.0 percent). (Tables 5-11)

Concerning job activities, less than half (44 percent) have any job at all, while the remaining 56 percent find themselves in other conditions (Table 12).

The characteristics concerning the professional situation also correspond to the two first items. In fact, compared to those who declared themselves to be students (47.2 percent) or did not give information in this regard (10 percent), those who declared themselves to be employed (40 percent) or independent (2.8 percent) represent a quota comparable to the subjects who declared themselves to have a job (Table 13).

Concerning alcohol consumption, only one-third of the subjects declared that they drink it more or less regularly (Table 14).

More than half of the subjects (55 percent) stated that they are non-smokers.

Seventy-four percent of the remaining 45 percent of smokers fall into the category that smokes from 10 to 29 cigarettes a day (Table 15).

B. Incidence Of Drug Users In Relation To Some Characteristics Of The Subjects

The total datum of the incidence of opiate users (1.67 percent) is the same (1.6 percent) for both minors and eighteen-year-olds (Table 3).

The datum for the 19-25 year-olds is only a little higher, at 2.2 percent.

Although the national average in the larger cities is 1.9 percent, there was a notable difference between Rome, with 1.4 percent, and Milan, with 3.5 percent.

Apart from these, the remaining values are mostly clustered around the 2 percent level.

The distribution of the subjects examined and the incidence of drug use according to age groups, Regions, and communities, relative to communities, provinces, and Regions examined are listed in Tables 16 and 17.

More precisely, the figures on opiate use show that:

- (1) The incidence is higher (3.2 percent) among those who have not completed their compulsory education, compared to those who have (1.5 percent), (Table 4);
- (2) It practically does not matter whether the subjects have a permanent job (1.8 percent) or a temporary job (1.9 percent), or something else (1.6 percent), (Table 12);
- (3) Drug use is practically independent of the type of work, of whether the subject is employed (1.9 percent) or self-employed (2.2 percent), while it is noticeably lower for those still pursuing their studies (1.1 percent). The high value concerning those who did not give information on that point (4.2 percent) is probably to be attributed to the lack of a work situation (Table 13);
- (4) It has little to do with the consumption of alcohol, being 1.1 percent in non-drinkers and 2.1 percent in those who drink more or less regularly (Table 14);
- (5) It is in direct relation to the amount of tobacco use, from 0.6 percent in the non-smokers to 1.4 percent-2.0 percent-5.2 percent-9.4 percent depending on the respective levels of tobacco use of 1-9, 10-19, 20-29, 30-39, or over 40 cigarettes per day (Table 15).

Even if for a more rigorous interpretation of the total data, it is necessary to consider the diversity of the population and the different situations on the local level, some parameters still offer indications which can, at least as a general picture, show up tendencies of a certain importance.

Among these notable facts is the lower incidence of drug use among students compared to those who, for whatever reason, no longer pursue their studies (1.850 x 100.000).

This indication is borne out by the results referring to educational levels: a higher level of education (junior high, or high school) is connected with about half the risk (1.533 x 100.000) compared to a more reduced level (no schooling or only elementary, 3.200 x 100.000), even without taking the university level into account, which would further accentuate the divergence.

Another condition directly associated with the opiate use phenomenon is the tobacco consumption (Table 15). The incidence data grow (from 1.410 to 9.884 x 100.000) in direct relation with the frequency of cigarette smoking (from 1-9 to more than 40 per day).

This correlation becomes even more evident if compared with the datum on non-smokers (678 x 100.000): in practice, the probability of becoming opiate users among those who smoke heavily (more than 30 cigarettes a day) is from seven to 15 times that of the non-smokers and from three to six times that of the average.

4. CANNABIS USERS

4.1 The Population Sampled

As previously mentioned, the sampling for the determination of THC (hashish, marijuana) users was limited to the major communities and reduced in numbers.

In the total distribution of these samples of population, the age groups up to 18 almost make up the total (97 percent), of which little more than one-fifth consists of minors; only 3 percent of the samples are from the 19-25 age group (Table 18).

4.2 Incidence Of THC (Cannabis Users)

The total datum of the incidence of THC use (8 percent) turns out to be close to the value for minors and eighteen-year-olds (7.8 percent).

This average value represents a uniform picture for the various communities, with a minimum of 7.0 percent in Turin and a maximum of 9.6 percent in Genoa.

The incidence observed in the 19-25 age group is 1.66 times greater than in the other age groups (Table 19).

5. INCIDENCE OF MULTIDRUG ADDICTS AMONG OPIATE USERS

In over half (58.9 percent) of the subjects showing positive results in the opiate tests, one or more other psychodrugs were also present (Table 20).

More precisely, a little less than half (47 percent) showed only one, 11 percent two, and only 1 percent three different drugs.

Among the multidrug users, the cannabinoids figure along with the opiates in over 80 percent of cases, either alone or together with the other psychodrugs. They are followed at a distance by the barbiturates (in about 15 percent), amphetamines (in about 14 percent), and cocaine (in less than 10 percent) (Table 21-23).

6. COMPARISONS WITH THE RESULTS OF THE FIRST TO.DI. PROJECT AND ESTIMATES OF OPIATE USERS

6.1 Comparison Of 1980-1982 Data In Six Metropolitan Areas

As we mentioned in the introduction, in order to allow a comparison with the 1980 findings, the same criteria were used in the investigation of the areas of Turin, Milan, Genoa, Bologna, Florence, and Rome (due to some differences in the composition of the respective samplings, the data on Palermo could not be compared in the same way).

In some areas, the phenomenon is developing in very different ways, while in others it seems to have a common character.

Even taking the variations in the composition of the sample into account, it appears that the spread of opiate use among young people has increased considerably in the two years from 1980 to 1982--more than 50 percent to 80 percent in Genoa and Turin; modestly, about 37 percent, in Milan; and has substantially stabilized (with a less than 15 percent increase) in Bologna, Rome, and Florence (Table 18, figure 1).

6.2 Estimates Of Opiate Users On The Basis Of The TO.DI.2 Data

For the calculation of the estimated number of opiate users in the entire population, the respective rates of incidence were applied on two different levels (national and regional), assuming a ratio of about 4:1 between males and females of the 17-29 age groups of users (or more precisely 82:18).

- A. Applying to the risk population of Italy (5.31 million males and 25 million females) the total rate of incidence of 1,666 x 100,000 determined experimentally in the areas of greatest risk, we arrive at a value of 108,200.
- B. Applying the corresponding rate to the risk population of all Regions for which it is available, and attributing to the remaining Regions for which the rate has not been determined experimentally a conventional value corresponding to the Regions of minor incidence, we have arrived at a figure of about 98,000 users (male and female).
- C. If we should attribute, however, the median rate of 1,666 x 100,000 (an evident overestimate) to the remaining Regions, the figure would be about 108,000 users (male and female).

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