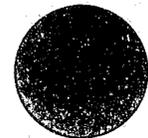


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Major Patterns of Polydrug Abuse among Heroin Addicts

John C. Ball, Eric Corty and Diane L. Erdlen

Department of Psychiatry, Temple University

David N. Nurco

University of Maryland

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Address correspondence to: John C. Ball, Ph.D.
Methadone Research Center
Temple University, 083-55
Philadelphia, Pa 19122

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ABSTRACT

The patterns of polydrug abuse in 105 heroin addicts were studied over successive addiction and non-addiction periods. An addiction period was defined as a time when a subject used opiates on a regular basis at least 16 days per month. Three patterns of poly drug abuse were found. During the first addiction period, 39% only used opiates and were not regular users of non-opiate drugs (amphetamine, cocaine, Valium, barbiturates, quaaludes, and Talwin-Pyribenzamine); 41% used one non-opiate regularly as well as opiates; 20% used two or more non-opiates in addition to opiates. During the first non-addiction period, these figures dropped--38% used no opiates or non-opiates, 26% used only opiates, 26% used opiates plus one non-opiate, and 10% used opiates plus 2 or more non-opiates. These patterns of use--Opiates Only, Combination or Polydrug I, and Multiple or Polydrug II--were found to be stable over time. As the subjects moved from addiction to non-addiction, the largest number of addicts either remained in their addiction pattern of abuse or moved to a less abusive pattern of drug use.

MAJOR PATTERNS OF POLYDRUG ABUSE AMONG HEROIN ADDICTS

John C. Ball, Eric Corty, Diane L. Erdlen, and David N.

Nurco

I. INTRODUCTION

• The Scope and Significance of Polydrug Abuse

The topic of polydrug abuse has received increased scientific and medical attention during the past decade in the United States.¹ This awakened interest in polydrug abuse (i.e., "simultaneous or sequential use of more than one psychoactive drug for nonmedical purposes," NIDA, Handbook on Drug Abuse, p. 151) has undoubtedly been influenced by the continuing spread of new patterns of drug abuse (e.g., PCP, cocaine) and concomitant recognition that multiple use of drugs is commonplace in many populations.

Within this context, polydrug abuse can be seen as a subset of the general historical problem of drug abuse. Thus, the emergence of new classes of non-opiate drugs after World War II,² the psychedelic revolution of the 1960's, the spread of marihuana use to school-age populations and the more recent trends of cocaine abuse have all affected the extent of polydrug abuse.

¹Donald R. Wesson and David E. Smith, "Treatment of the Polydrug Abuser," Handbook on Drug Abuse, National Institute on Drug Abuse, Washington, D.C., 1979, 151-157;
S.W. Sadave, "Concurrent Multiple Drug Use: Review and Implications," Journal of Drug Issues (Fall, 1984), 623-636

²John C. Ball and Carl D. Chambers, The Epidemiology of Opiate Addiction in the United States (Illinois: Charles C Thomas, 1970.)

The issue of prevalence is, however, only an initial reason for investigating the phenomenon of polydrug abuse. For the persistent abuse of numerous drugs has far-reaching medical and scientific significance. From a medical perspective, it is necessary to ascertain the extent and complexities of polydrug abuse if meaningful treatment is to be effected.³ From a scientific perspective, polydrug abuse involves specific drug interactions, long-term effects of multiple drug abuse and such theoretical issues as whether a sequential or progressive cumulative model is more appropriate in explaining the general phenomenon of multiple drug abuse.⁴

In studying the extent of polydrug use and its long term dynamics, it is efficacious to focus research upon particular populations or specific samples of drug abusers. For the prevalence of drug abuse and polydrug abuse both vary widely in different populations. In this regard, it is especially meaningful to investigate patterns of polydrug use among designated populations of drug abusers as these subjects are already involved with at least one drug and, therefore, are likely to be at risk for abuse of others as well. The present paper investigates the patterns of polydrug abuse among heroin addicts.

³Donald R. Wesson and David E. Smith, "Treatment of the Polydrug Abuser", Handbook on Drug Abuse, op. cit., Chapter 12.

⁴Sadava, "Concurrent Multiple Drug Use: Review and Implications."

● The Significance of Polydrug Abuse Among Heroin Addicts

There are three reasons why the investigation of polydrug abuse among heroin addicts is meaningful.

First, heroin addicts are a well-defined, enduring and sizeable population of drug abusers in the United States (i.e., some 500,000 addicts). Consequently, they constitute an important segment of the general population at risk for polydrug abuse. Second, the extent and characteristics of polydrug abuse within this population provide a kind of natural experiment as to the current and long-term trends of single drug dependency vs. polydrug dependency in an addicted population. And third, the occurrence of both addiction and non-addiction periods in the career of heroin addicts provides a means of investigating the specific impact of opiate addiction vs. non-addiction upon polydrug abuse.⁵

The present study seeks answers to four research questions: (1) What classes of non-opiate drugs are used by active heroin addicts? (2) Are there distinct patterns of polydrug abuse among heroin addicts? (3) How is polydrug abuse affected by the cessation of addiction? (4) How stable are polydrug patterns over addicts' years of addiction?

⁵Comparisons in polydrug use between addicts in treatment with those on the street are also revealing: see Dana E. Hunt and Douglas S. Lipton, "Polydrug Use and Methadone Treatment", Pharm Chem Newsletter, Vol. 13, (Sept.-Oct., 1984), 1-9.

II. SAMPLE AND RESEARCH PROCEDURE

The sample consisted of 105 consecutive male admissions to a methadone maintenance treatment program in Pennsylvania. Forty percent of the subjects were white and sixty percent were black. The mean age at time of interview was 34.1 years and all subjects were at least 25 years old. The mean years from onset of addiction to time of interview was 11.3 years.

Each of the addicts was interviewed during a nine month period by one of two experienced and specially trained interviewers at the treatment program. The interviews were conducted in private and the data were kept confidential. The interview schedule included detailed questions about the frequency of specific types of drug use during each subject's addiction career. As in our previous research,⁶ each subject's career since the onset of addiction was recounted with respect to successive periods of addiction, nonaddiction and incarceration. A person was considered as being in an addiction period if he reported at least 4 days of regular opiate use per week or at least 16 days per month. A person was considered as being in a non-addiction period if he reported less frequent regular opiate use. Detailed information about the frequency of drug use during the addiction and nonaddiction periods was obtained.

⁶John C. Ball, John W. Shaffer and David N. Nurco, "The Day-to-Day Criminality of Heroin Addicts in Baltimore," Drug and Alcohol Dependence, 12 (1983), pp. 119-142.

III. RESEARCH FINDINGS

• The Extent of Polydrug Abuse

The overall incidence of polydrug abuse for the addict sample during the two addiction and one non-addiction periods is shown in Table 1. In the first addiction period (which followed the onset of opiate addiction) some 10 to 30 percent of the sample used each of the following five classes of drugs - cocaine, amphetamines, barbiturates, Valium, and other non-opiates. Of these five drugs, amphetamines were most commonly used; they were used on a monthly basis by 29.5 percent of the addicts. Next in order was cocaine (21.9 percent) followed by Valium (18.1), other non-opiates (15.2) and barbiturates (10.5 percent).

Marihuana and alcohol use are tabulated separately. Marihuana was the most frequently used drug (apart from heroin); it was used by 44.8 percent of the addicts during their first addiction period. Alcohol was used regularly by 20.0 percent of the sample during this period.

The mean frequency of drug use for those who used each drug varied from nine to 22 days per month. The highest frequency of daily use occurred with marihuana (22.0 days per month for the 47 addicts who used this drug); the lowest frequency was for Valium and the other non-opiate classifications (8.8 and 8.7 days respectively).

The overall incidence of non-opiate use markedly decreased during the first non-addiction period (Table 1). Thus, the percent of the sample using each of the five classes of drugs declined and this lower incidence meant that only about half as many were using each type of drug.

At the same time, the frequency of use for those who continued to abuse each class of drug remained relatively high during this non-addiction period. Indeed, the days of use per month increased for four of the five classes of drugs; only cocaine frequency declined.

The proportion of the sample using marihuana or alcohol during the first non-addiction period also declined from the first addiction period, but the frequency of use for those who continued using remained high. Thus, the third of the sample who used marihuana during this period had 21.9 days of use per month; this frequency of use was the same as during the first addiction period (22.0) although fewer addicts used marihuana in the non-addiction period (29 vs. 47).

During the longest addiction period there was an increased incidence of non-opiate drug use from that of the non-addiction period. Thus, four of the first five classes of non-opiate drugs were used by a larger percent of the sample. Conversely, marihuana and alcohol use remained relatively stable or decreased somewhat in this longest addiction period.

In the longest addiction period, the frequency of use - in days per month - was generally similar to that which occurred in the first addiction period. Indeed, the overall similarity of the two frequency distributions is striking - in most instances the difference is less than three days per month. In this second addiction period, then, the extent of both opiate and polydrug abuse was generally similar to that of the first addiction period.

• Three Major Patterns of Drug Abuse in the Sample

Analysis of individual patterns of non-opiate drug abuse by these 105 male opiate addicts during successive addiction and non-addiction periods provides further information about major lifetime patterns or configurations of drug use. (These enduring individual patterns are not revealed by sample incidence data). Analysis of individual drug use during the first addiction period reveals that there are three major patterns of drug abuse within this sample (Table 2 and Figure 1).

The first major pattern of drug use consists solely of opiate use (Table 2). This drug use pattern obtained for 41 of the 105 addicts (39 percent). This opiates only group did not abuse any of the five classes of non-opiate drugs (i.e., cocaine, amphetamines, barbiturates, Valium or other non-opiates) on a regular monthly basis. (Use of marihuana and alcohol are classified separately and discussed below). The opiates only group, then, are not classified as polydrug abusers.

The second major pattern of drug abuse found within this sample of addicts involves combination use of one non-opiate drug with opiates. This combination pattern is termed Polydrug I, and 43 of the 105 addicts (41.0%) adhered to this pattern during their first addiction period. Further analysis of these combination patterns will be presented later.

The third pattern of drug abuse has been designated Polydrug II. In this instance, individuals abused two or more non-opiate drugs along with opiates. In the first addiction period, 21 of the 105 addicts (20.0%) were classified as Polydrug II abusers.

Before turning to a detailed description and analysis of the two classifications of polydrug abusers, it is pertinent to comment about the use of marihuana and alcohol in these three groups.

There were marked differences in the incidence of marihuana and alcohol use by subjects in each of the three major drug pattern groups. Thus, 76.2 percent of the Polydrug II group were regular marihuana users. Conversely, only 39.5 percent of the Polydrug I group and 34.1 percent of the opiates only group were regular marihuana users. In all three groups, however, the frequency of use for those who used marihuana was high (23 days per month, 19 days and 24 days for the Opiates Only, Polydrug I and II groups respectively).

Similarly, alcohol use was most common among the Polydrug II group and markedly lower for the other two groups. Thus, 52 percent of Polydrug II used alcohol regularly, compared with 14 percent for the Polydrug I and 10 percent for the opiates only group.

With regard to both marihuana and alcohol use, the 21 addicts classified as multiple polydrug abusers (i.e., the

Polydrug II group) had markedly higher rates than either of the other two groups. Thus, the Polydrug II group used marihuana on a regular basis twice as often as the other groups and they used alcohol regularly almost five times as often.

IV. POLYDRUG I - SINGLE COMBINATIONS

Almost half of the 105 addicts abused a single non-opiate drug during their first addiction period. As noted, these 43 addicts have been classified as Polydrug I abusers.

In as much as each of the 43 Polydrug I abusers combined only one non-opiate drug with their use of heroin (and other opiates) it is feasible to tabulate these combinations by specifying the number who abused each type of non-opiate drug (Table 3). From such data it may be seen that amphetamines were the most common secondary drug abused by this group (37.2 percent), followed by cocaine (20.2), Valium (16.3), barbiturates (9.3), Quaaludes (4.7), and Talwin and Pyribenzamine (2.3).

With regard to frequency of use, these secondary drugs were commonly used some 5 to 13 days per month by the Polydrug I individuals. As might be expected, the highest frequency was for amphetamines and cocaine; each was used some 13 days per month during this first addiction period by the 29 addicts who used these two drugs in combination with opiates. Less frequent use of Valium, barbiturates, Quaaludes, and Talwin - Phyrbenzamines was observed (from 5 to 10 days per month) for those who abused these drugs in combination with opiates.

Combination use of a single drug and opiates markedly decreased during the non-addiction period. Thus, only 22 individuals were classified as Polydrug I abusers during this period. This decrease in non-opiate use occurred across all drug classifications -- for amphetamines, cocaine, Valium, barbiturates, Quaaludes and Talwin - Pyribenzamines. At the same time, frequency of use among those who abused each type of drug did not decrease; in the case of Valium there was even a notable increase from 7 to 21 days of use per month.

In the longest addiction period, the overall incidence of combination abuse was similar to that of the first addiction period. Thus, amphetamines and cocaine again were the leading secondary drugs of abuse and frequency of use remained high or increased somewhat.

V. POLYDRUG II - MULTIPLE POLYDRUG ABUSE

One of the three major patterns of drug abuse observed among the heroin addicts studied was regular use of two or more non-opiate drugs along with opiates.⁷ Twenty-one of the 105 addicts were found to be such multiple polydrug abusers in the first addiction period. The Polydrug II group, then, consisted of 21 addicts who abused several non-opiate drugs concomitantly with their opiates.

⁷As noted previously, neither alcohol nor marihuana use was employed in the derivation of the three drug classification groups; use of these two drugs within the three groups was, however, analyzed.

The extent and frequency of polydrug abuse among these 21 addicts, during their first addiction period, is tabulated in Table 4. These 21 polydrug addicts used from 2 to 7 different types of drugs on a regular monthly basis. Thus, the average Polydrug II addict used some three non-opiate drugs in addition to his use of opiates.

The total array and configuration of drug use by these 21 addicts depicts a wide range of abuse patterns as well as certain notable combinations. With regard to incidence of use of specific drugs within this group, amphetamines is highest (71.4 percent), followed by Valium, Quaalude, cocaine, barbiturates, other hallucinogens, Talwin - pyribenzamines, PCP and inhalants.

With regard to frequency of use of each drug, barbiturates were regularly used 13 days per month by 7 of the 21 addicts; cocaine was used 12 days per month by 8 addicts; the remainder of the drugs were used less frequently (Table 4).

The data presented in Table 4 indicate both the configuration and frequency of polydrug abuse for each of the 21 addicts designated as Polydrug II members. Thus, subject 008 was primarily an abuser of barbiturates and Valium (25 days per month for each), although he also abused Quaaludes and T's and blues on a less frequent basis. With regard to daily use, six of the 21 polydrug addicts used at least one non-opiate drug more than 20 days per month. As noted, several addicts were daily users of more than one non-opiate drug.

With regard to overall configurations of drug abuse within this Polydrug II group, several observations are relevant. First, the occasional users of multiple drugs appear to be quite different from the daily users. Second, certain "agonist" and "antagonist" patterns are notable. Thus, concurrent barbiturate and amphetamine abuse is uncommon; conversely, Valium and amphetamine use is common. Third, daily use (i.e., greater than 20 days a month) of two non-opiate drugs is an evident pattern. One third of the polydrug abusers who are daily users of one drug also abuse a second on a daily basis. (Further investigation of these daily abusers is indicated).

VI. THE CONTINUITY OF POLYDRUG ABUSE

From the detailed interview data pertaining to drug abuse during successive addiction and non-addiction periods, it is possible to trace the continuity of the three major patterns of drug use. Thus, one may ask: Do the various patterns of drug abuse remain stable? Do opiate only addicts become Polydrug I addicts? Does the Polydrug II group continue its multiple drug abuse in successive periods?

Analysis of individual patterns of drug usage over successive periods of addiction and non-addiction reveal a general trend toward stability during successive addiction periods and a decrease in polydrug abuse during non-addiction periods. These findings indicate that the three major patterns of drug use established in the years

after onset of opiate addiction are relatively stable.

The stability or change of the three major patterns of drug abuse from the first addiction to the first non-addiction period are tabulated in Table 5. The opiates only group remained quite stable in its extent of polydrug abuse during the non-addiction period. Thus, 73.5 percent of this group either continued to use some opiates or did not use opiates at all. Some 23.5 percent of this group did become combination polydrug abusers (Polydrug I), but only 2.9 percent (one subject) became a multiple polydrug abuser (Polydrug II).

The combination polydrug group was similar in its stability from the first addiction to the first non-addiction period. Thus of the 35 Polydrug I abusers who had a non-addiction period, 34.3 percent continued as combination abusers and a similar number had no non-opiate usage; only 8.6 percent changed to multiple polydrug abuse (Polydrug II).

Unexpectedly, the twenty-one polydrug II abusers did not, for the most part, continue their multiple polydrug abuse during the non-addiction period. Of the 17 with a non-addiction period, only 29.4 percent continued as polydrug II abusers, the remainder changed to lesser patterns of polydrug use or ceased such use entirely. This last finding, that some one-third of the polydrug II abusers did not continue any polydrug use during their non-addiction period, suggests that there was an overall impetus for

abstinence within part of this group that subsumed both opiate and non-opiate drug abuse.

The stability of the three major patterns of drug abuse established in the first addiction period is evident in successive addiction periods. Thus, most of the opiates only abusers continued with this drug pattern in their longest addiction period. Only four became combination abusers and only one turned to multiple polydrug abuse.

Among the polydrug I group, most continued this same pattern of combination abuse during their longest period of addiction (55 percent). The remainder, changed to abuse of opiates only (39.6 percent) or became multiple polydrug abusers (5.3 percent).

The twenty-one multiple polydrug abusers continued to be polydrug abusers during their longest addiction period, although, there was considerable change to lesser diversity of usage. Specifically, eight of the nineteen addicts classified as polydrug II abusers who had a second addiction period (two of the twenty-one were continually addicted) continued to be multiple polydrug abusers. A somewhat smaller number (N=7) changed to combination polydrug abuse and four changed to regular use of only opiate drugs.

Conclusion

Investigation of the extent of prior polydrug abuse among 105 heroin addict admissions to a methadone maintenance program revealed that there were three distinct patterns of drug abuse within this population. First, it

was found that some 39 percent of these addicts do not abuse non-opiate drugs on a regular basis (not including marihuana or alcohol). Second, it was observed that 41 percent are polydrug I abusers who regularly use one non-opiate drug as well as opiates. And third, it was found that 20 percent of these heroin addicts are multiple polydrug abusers who regularly use two or more non-opiate drugs in addition to heroin.

Further analysis of drug abuse patterns within this sample during successive periods of addiction and non-addiction revealed that the extent of polydrug abuse markedly declines during non-addiction period. At the same time, it was found that the frequency of abuse remained high for those who continued their polydrug pattern of abuse.

Lastly, it was found that the three major patterns of drug abuse established in the years after onset of opiate addiction were quite stable over the addicts' careers. Thus, each of these three drug abuse patterns continued over the years of addiction. The two polydrug groups continued their combination or multiple drug use as did these addicts who limited their regular drug abuse to opiates.

TABLE 1. PERCENT OF ADDICT SAMPLE ABUSING SEVEN CLASSES
OF NON-OPIATE DRUGS DURING ADDICTION
AND NON-ADDICTION PERIODS

	First Addiction Period (N=105)			First Non-Addiction Period (N=86)			Longest Addiction (N=96)		
	N	Percent of Sample Using Drug	Mean Day Per Mth. for Users	N	Percent of Sample Using Drug	Mean Day Per Mth. for Users	N	Percent of Sample Using Drug	Mean Day Per Mth. for Users
• Heroin	104	99.0	25.8	41	47.7	6.7	91	94.8	23.8
• Other Opiates	37	35.2	13.7	10	11.6	4.6	30	31.2	18.0
1. Cocaine	23	21.9	11.9	10	11.6	9.1	21	21.9	13.8
2. Amphetamines	31	29.5	10.8	17	19.8	13.8	22	22.9	11.5
3. Barbiturates	11	10.5	11.7	3	3.5	12.7	2	2.1	8.0
4. Valium	19	18.1	8.8	8	9.3	17.2	11	11.5	12.4
5. Other Non-Opiates	16	15.2	8.7	6	7.0	18.7	8	8.3	9.3
6. Marihuana	47	44.8	22.0	29	33.7	21.9	29	30.2	23.5
7. Alcohol	21	20.0	16.8	16	18.6	14.7	11	11.5	19.5

NOTE: Other Opiates include illicit Methadone, Morphine, Liquid Codeine, Dilandid, Demerol, Percodan and Pantapone. Other non-opiates includes Talwin and Pyribenzamine, PCP, Quaalude and inhalants.

TABLE 2. NUMBER OF ADDICTS CLASSIFIED AS OPIATE ONLY,
COMBINATION POLYDRUG AND MULTIPLE POLYDRUG ABUSERS
IN ADDICTION AND NON-ADDICTION PERIODS

Drug Abuse Classification	First Addiction Period		First Non-Addiction Period		Longest Addiction Period	
	No.	Percent	No.	Percent	No.	Percent
A. Opiates Only	41	39.0	22	25.6	52	54.2
B. Combination Polydrug	43	41.0	22	25.6	32	33.3
C. Multiple Polydrug	21	20.0	9	10.5	12	12.5
			33 (None)	38.4		
TOTAL	105	100.0	86	100.0	96	100.0

NOTE: The number of addicts in the first non-addiction period (86) and the number in the longest addiction period (96) is less than 105 as some subjects did not have an "off period" or a second addiction period. In the first non-addiction period, 33 of the 86 subjects were not using any opiates or non-opiate drugs; these are listed as "none".

TABLE 3. THE SPECIFIC DUAL COMBINATIONS OF
POLYDRUG ABUSE IN THE THREE PERIODS

Combination Pattern: <u>Opiates and --</u>	<u>First Addiction Period</u>			<u>First Non-Addiction Period</u>			<u>Longest Addiction</u>		
	No.	Percent Using Drug	Mean Days*	No.	Percent Using Drug	Mean Days*	No.	Percent Using Drug	Mean D
1. Amphetamines	16	37.2	12.9	9	40.9	16.8	13	40.6	16.5
2. Cocaine	13	20.2	12.8	7	31.8	10.4	13	40.6	16.2
3. Valium	7	16.3	6.9	6	27.3	20.8	5	15.6	6.8
4. Barbiturates	4	9.3	9.2	-	-	-	-	-	-
5. Quaaludes	2	4.7	5.0	-	-	-	-	-	-
6. Talwin & Pyrib.	1	2.3	10.0	-	-	-	1	3.1	10.0
TOTAL	43	100.0	11.1	22	100.0	15.9.	32	<u>100.0</u>	14.7

*Mean Days of abuse of drug for those who used the drug.

TABLE 4. THE EXTENT AND FREQUENCY OF MULTIPLE POLYDRUG ABUSE AMONG 21 ADDICTS DURING THEIR FIRST ADDICTION PERIOD

ID#	Amphet.	Barbs.	Cocaine	Valium	Quaal.	Other Hallu.	Talwin & Pyrib.	PCP	Inh.	Number of Different Drug
008		25		25	2		2			4
009	1			8						2
013	2		4							2
014	4			8						2
015	2					2				2
016	4	4		4	4		16	4	1	7
017	1					1				2
018	1		1	2	1					4
025	10		30	4	1	1				5
026		1	1							2
029	4	8			8		8			4
044		4		4	1	1		2		5
049			8		8	4				3
051		20	30	8	8	12		8		6
061	15	30								2
062	15				8					2
082	30			30						2
084	10			15	15					3
111	30		4							2
114			20	10						2
119	2			1	1					3
										Mean = 3.14

Number of

Abusers=15

7 8 12 11 6 3 3 1

Mean = 8.7

13.1 12.2 9.9 5.2 3.5 8.7 4.7 1.0

Days/Month

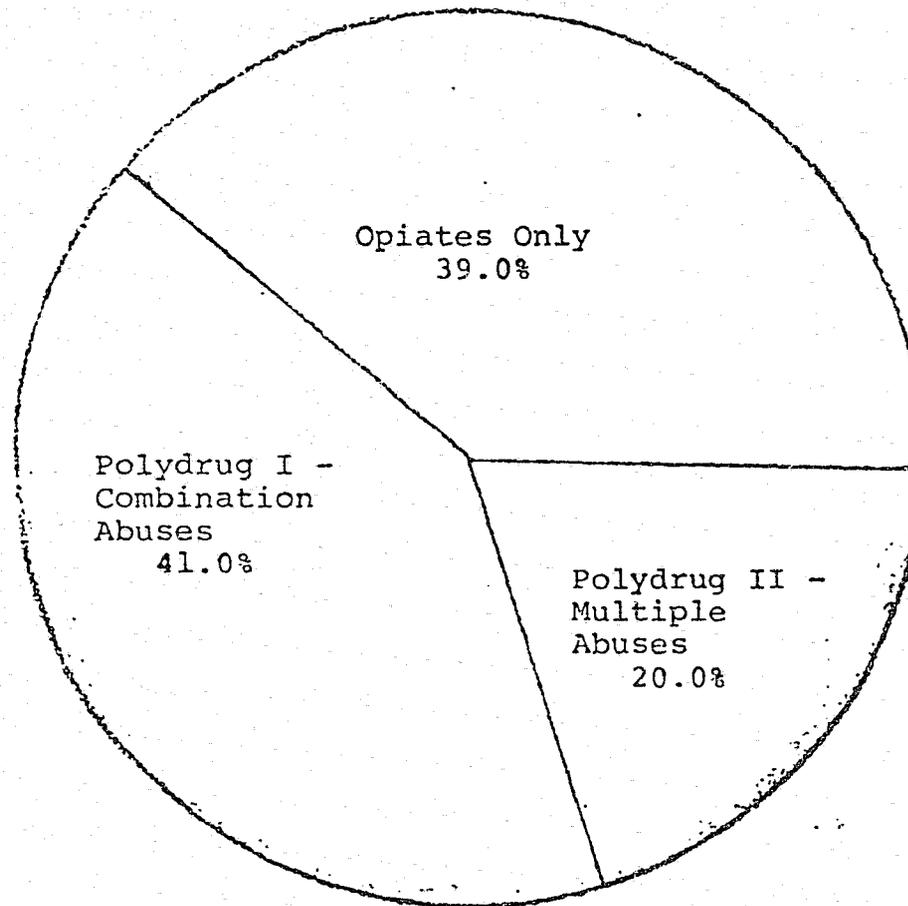
TABLE 5. CHANGE IN MAJOR POLYDRUG ABUSE PATTERNS FROM FIRST ADDICTION TO FIRST NON-ADDICTION PERIOD

<u>Drug Abuse Pattern in First Addiction Period</u>	<u>Number in Group</u>	<u>Changing to:</u>	
		<u>n</u>	<u>%</u>
A.. Opiates Only (N=41)	(34)	A. 10 B. 8 C. 1 <u>0 15</u>	29.4 23.5 2.9 44.1
B. Polydrug I; Combination (N=43)	(35)	A. 8 B. 12 C. 3 <u>0 12</u>	22.9 34.3 8.6 34.3
C. Polydrug II; Multiple (N=21)	(17)	A. 4 B. 2 C. 5 <u>0 6</u>	23.5 11.8 29.4 35.3
Total: 105	86*		

*Note: Of the 105 addicts, 86 had one or more non-addiction periods from onset to time of interview; these non-addiction periods occurred during time at risk (i.e., on the street) and do not include periods of incarceration.

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FIGURE 1. THREE MAJOR PATTERNS OF DRUG ABUSE AMONG OPIATE ADDICTS DURING THEIR FIRST ADDICTION PERIOD



Legend

Opiates Only: Addicts only used opiates (N=41)
Polydrug I: Addicts used opiates and one other drug regularly (N=43)
Polydrug II: Addicts used two or more drugs in addition to opiates (N=21)