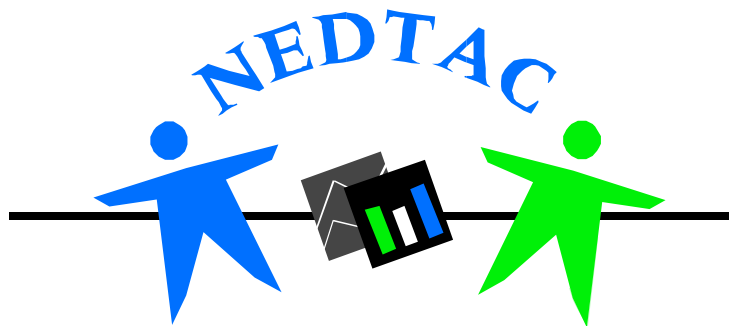


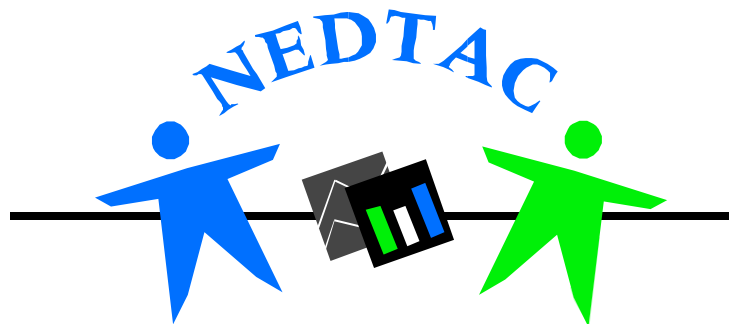
**NATIONAL EVALUATION DATA AND
TECHNICAL ASSISTANCE CENTER**



**THE DISTRICT OF COLUMBIA
TREATMENT INITIATIVE (DCI)**

February 1998

NATIONAL EVALUATION DATA AND TECHNICAL ASSISTANCE CENTER



THE DISTRICT OF COLUMBIA TREATMENT INITIATIVE (DCI)

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CSAT
Center for Substance
Abuse Treatment
SAMHSA

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FOREWORD

The effectiveness of publicly-funded substance abuse treatment has come under increasing scrutiny in recent years. Indeed, the need to justify the expense of treatment programs based on the results achieved has never been more critical. Toward this end, The Center for Substance Abuse Treatment (CSAT) entered into a cooperative agreement called the District of Columbia Treatment Initiative (DCI). The DCI was an experiment designed to test the efficacy of providing enhanced inpatient and outpatient treatment of different durations to clients seeking treatment in Washington, DC. The organizations involved in the cooperative agreement included CSAT; DC. Alcohol and Drug Abuse Services Administration (ADASA); the National Institute on Drug Abuse (NIDA); Koba Associates, Inc., in collaboration with the Research Triangle Institute (RTI); the Institute for Behavior Resources (IBR); and Second Genesis, Inc.

The Center for Substance Abuse Research (CESAR), at the University of Maryland, College Park, was funded by CSAT to conduct a follow-up study with clients who participated in the DCI, specifically, clients assigned to the Second Genesis residential programs. The objective of the study was to determine the extent to which client outcomes differed between clients receiving the experimental program (6 months of inpatient treatment followed by 6 months of outpatient care) and those receiving the standard program (10 months of inpatient treatment followed by 2 months of outpatient care). This report presents the results of the follow-up study.

We wish to thank Susanna Nemes, Ph.D., Eric Wish, Ph.D., and Nena Messina, M.A. from the Center for Substance Abuse Research for their development of this report, and Ron Smith, Ph.D., Karl D. White, Ed.D., and Arthur Anderson at the Center for Substance Abuse Treatment for their guidance, review, and comments.

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EXECUTIVE SUMMARY

The District of Columbia Treatment Initiative (DCI) was an experiment designed to test the efficacy of providing inpatient and outpatient aftercare of different durations to clients seeking treatment in Washington, DC. The experiment randomly assigned clients to two therapeutic community programs, which differed primarily in planned duration. The standard inpatient program consisted of 10 months of inpatient treatment followed by 2 months of outpatient care, and the enhanced inpatient program consisted of 6 months of inpatient treatment followed by 6 months of outpatient care.

Of the 412 clients who participated in either treatment program, 93 percent were re-interviewed in order to assess treatment outcomes 6 months post-discharge and 3 months prior to the interview. This study addressed many of the limitations of prior research in a sample of cocaine-abusing clients by using random assignment of clients to treatment programs, achieving high post-treatment follow-up rates, and using objective measures of drug use and criminal history. The study's main goal was to compare clients from the two treatment programs on functioning at follow-up, including drug use, criminal activity, and employment status.

Our results indicate that for cocaine-abusing clients, the type of treatment program attended is not as critical as completing 12 months of either treatment program. The only difference found when comparing clients from the two treatment groups at follow-up was that those who attended the standard inpatient program were more likely to be employed at follow-up than those who attended the enhanced inpatient program. This result may be explained by the additional vocational services provided by the standard inpatient program. On the other hand, various differences were found between clients who completed both inpatient and outpatient phases of treatment and clients who did not complete either phase or who completed only the inpatient phase. Regardless of the program to which persons were assigned, those who completed 12 months of treatment were less likely to be rearrested after treatment, and less likely to test positive for cocaine at follow-up. Implications of the findings are discussed.

I. THERAPEUTIC COMMUNITY OVERVIEW

The current study examines the outcome of an experiment in two therapeutic community (TC) programs and addresses many of the limitations of prior research. Our study was designed so that clients were randomly assigned to one of two programs with different lengths of inpatient treatment. Furthermore, to measure drug use and criminal activity without relying solely on self-reports, urine and hair specimens were collected from participants, and criminal records were coded. By assessing clients for a range of psychiatric disorders, the current study also examines co-morbidity in substance abusers. Finally, the very high follow-up rate (93%) obtained in this study minimized sample bias in the post-discharge findings.

This chapter reviews previous research. Subsequent chapters describe the experimental and the follow-up study, present the results, and discuss our findings.

1. DESCRIPTION OF THERAPEUTIC COMMUNITIES

Therapeutic communities for substance abuse were first established in the late 1950s, as a self-help alternative to existing treatments. Therapeutic communities were originally developed as a long-term residential, drug-free treatment modality for severely dependent heroin addicts (McCusker et al., 1995). Today TCs are one of the most common residential treatment modalities available for substance abusers with any type of drug addiction. The majority of traditional TCs are publicly funded and similar in structuring, staffing, and length of stay (DeLeon & Rosenthal, 1989). The TC structure is governed by a hierarchical system in which privileges are granted to those who are in the later phases of treatment. Residents submit to a system that implements rewards for improvement in behavior and punishment for inappropriate behavior. The staff is often composed of TC-trained clinicians along with human service professionals. Therapeutic community clinicians are generally former substance abusers who have been rehabilitated in a TC (DeLeon, 1995). Traditionally, inpatient rehabilitation programs could signify having to live in a strict and rigid environment for up to 2 years; however, length of stay has often varied from 15 to 24 months.

Because TCs have been in existence for some time and have been an important form of treatment for substance abuse, they have been studied by many researchers. There has been research on who gets treated in TCs and correlates of success including predictors of retention and length of treatment needed.

1.1 Who Gets Treated In TCs

Therapeutic communities have always served a diversity of clients; however, DeLeon et al.(1989) report a race/ethnic distribution with a white majority in most samples. Two well-known studies of drug abuse treatment, the Drug Abuse Reporting Program (DARP) in the 1970s and the Treatment Outcome Prospective Study (TOPS) in the early 1980s, also supported this finding. A comparison of demographic characteristics of TC clients in both studies showed no significant differences in race or ethnicity. The majority of TC clients were more likely to have been non-Hispanic whites. The greatest difference between clients in DARP and TOPS was client age. Almost half (47%) of those in TOPS were over age 25, while in DARP only 25 percent were in that age range (Condelli & Hubbard, 1994).

There are various ways in which clients enter TCs. Some clients enter TCs by self-referral, and some are actively recruited by TC staff, but often clients are coerced into TCs by legal authorities (e.g., parole, probation, and court mandates) as an alternative to incarceration. Yet Heit (1991) contends that TCs often overlook special individual concerns such as criminal histories or psychiatric disorders that may interfere with the typical TC learning philosophy. Prevalence of psychiatric disorders among substance abusers has been widely recognized. A recent investigation of dual diagnosis or co-morbidity in the general population by the Epidemiological Catchment Area Study showed that 30 percent of those who have ever had a psychiatric disorder have also had substance abuse problems (Rahav et al., 1993). Antisocial personality disorder, depression, and borderline personality disorder appear to occur most frequently in substance abuse samples (Tims, DeLeon, & Jainhill, 1994).

1.2 Predictors of Retention

Condelli and Hubbard (1994) found that the longer clients spent in TCs, the less likely they were to return to drug use and criminal behavior. In addition, clients who remained in treatment for longer periods of time had higher rates of post-treatment employment and earnings (French, Zarkin, Hubbard, & Rachal, 1993). Remaining in treatment is expected to be associated with better outcome, as it seems to be related to motivation to change, which is also related to recovery.

Another correlate of success is outpatient treatment immediately following inpatient treatment. The assumption is that “a socially responsible role is acquired by acting the role” (DeLeon & Rosenthal, 1989, p. 1,381). Heit contends that “scant attention [has been given] to a

continuum of care that would facilitate a transition back into the families and communities of origin” (1991, p. 4), although more U.S. TCs now incorporate cultural values of society as part of the process of reintegrating the client into society (DeLeon, Melnick, Schoket, & Jainchill, 1993). Moos, Pettit, and Gruber (1995) support this need for transitioning into the community. They found that success in keeping clients from returning to inpatient therapy is attributed to greater exposure to outpatient mental health care immediately following release from inpatient care. Inciardi, Martin, Butzin, Hooper, and Harrison (1997) in their prison-based treatment for drug-involved offenders study, also stress the importance of a transition from inpatient treatment to community life, which can be achieved by an outpatient or aftercare program.

Moos, Pettit, and Gruber (1995) have shown that a length of stay greater than 8 weeks in an outpatient community residential facility (CRF) significantly reduces the chance that a client will return to inpatient care. Hser (1995) suggests that highly structured treatment at least twice a week in a supportive environment with a counselor who has received even minimal training in the field of substance abuse can drastically improve a client’s recovery. Hiller, Knight, Devereux, and Hathcoat (1996) found that program graduates who attended a residential aftercare program were more likely to remain drug-free and be employed at post-treatment follow-up than those who did not attend the aftercare program.

In addition, it has been found that participation in groups such as Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) will increase the likelihood of maintaining a drug-free lifestyle (Huselid, Self, & Gutierrez, 1991). Inpatient rehabilitation should be viewed as a start to a continuous treatment program, which may include 12 step groups such as AA (Miller, Millman, & Kerskinen, 1990).

1.3 Length of Treatment Needed

Research on 10 therapeutic communities reported that clients needed 6 to 12 months of treatment in order to reduce recidivism and a year or more to reduce use of drugs; however, decreases have been found among clients who stayed in treatment for as little as 50 days (Condelli & Hubbard, 1994). Currently, there is much controversy over the duration of treatment needed for positive outcomes (McCusker et al., 1995). McCusker et al. found “minimal differences in effectiveness of programs varying in planned duration from 3 to 12 months,” but they were hesitant to draw conclusions based on these findings as they had not conducted any long-term follow-up at the time that they had published their initial findings.

Previous reports have indicated that success depends largely on the length of stay in a TC; however, it has also been found that success is more closely related to a client's completion of the rehabilitation program (Heit, 1991). Over the years, studies have repeatedly found that longer programs have lower completion rates (McCusker et al., 1995), with 7 to 15 percent of those originally enrolled in long-term programs remaining in treatment after 1 year (Martin, Butzin, & Inciardi, 1995; McCusker, 1995). However, 75 percent of the graduates followed up after treatment remained drug-free (DeLeon, 1990). Condelli and DeLeon (1993) have found that nearly half of all program participants abandon long-term TCs within the first 3 months after admission. Those who remain in treatment the longest appear to be those who possess a continued motivation to change (DeLeon & Rosenthal, 1989). Clients who fail to complete a treatment program are more likely to revert to criminal behavior and drug use and are less likely to be employed at post-treatment follow-up (Condelli & DeLeon, 1993).

Innovative programs, such as Daytop Miniversity in New York where clients receive a college level education during their rehabilitation, have been shown to increase the number of clients who remain in treatment for at least 1 year. Some studies have found that clients remain in the residential facility for the time they believe is necessary for their treatment, regardless of the predetermined length of the program (Condelli, 1986; DeLeon, 1991).

1.4 Completion Rates

Completion rates are generally expected to be greater for programs that are shorter in length. Simpson (1981) suggests that clients need to remain in treatment for at least 3 months in order to improve outcome significantly. Charuvasta, Dalali, Cassuci, and Ling (1992) compared the outcome of clients in a 3-month TC to clients who had previously participated in the 1-year program. The researchers assessed post-treatment criminal activity and drug use as indicators of treatment outcome. The failure rate for the 3 month program was 47 percent, whereas the failure rate for the 1-year program was 26 percent. However, 18 percent of the clients from the 3-month program could not be located at follow-up. The results of this study may be biased due to only self-report data measuring drug use and criminal activity and the high sample attrition rate.

DeLeon (1991) reported completion rates exceeding 29 percent for programs that were only 1 year in length, revealing percentage rates more than double that of most long-term communities. In order to promote greater completion rates of TC clients and to increase access to a larger number of clients, many TC programs now offer graduation within 1 year (McCusker

et al., 1995). It has been further suggested that lengthy programs need to consider shortening the inpatient phase and increasing the outpatient phase in order to reduce client attrition (Condelli, 1986).

Condelli and Hubbard (1994) conducted a study assessing predictors of retention in treatment. Data for analyzing client outcomes came from the TOPS study, conducted by the Research Triangle Institute. The study consisted of 12,000 clients in TCs and in other residential treatment programs across the United States. Of these, 62 percent were enrolled in TCs. No significant differences were found for race/ethnicity as predictors of treatment outcome. DeLeon, Melnick, Schoket, and Jainchill (1993) agree that generally these are not consistent predictors of retention in any treatment modality. But age and time spent in treatment were shown to be important predictors of client outcome. In agreement with the DARP study, older clients tended to stay in TC treatment longer when compared to other treatment modalities.

2. LIMITATIONS OF PRIOR TREATMENT STUDIES

Although we have a substantial amount of knowledge regarding TCs based on the studies that have been described, many of these studies have methodological limitations. None of the studies presented randomly assigned clients to treatment programs, except for McCusker's (1995), whose findings were based strictly on self-report, without validation by objective measures of drug use. Furthermore, many of the studies indicated that conducted follow-ups had low follow-up rates, which may produce a biased sample, and did not examine the psychiatric disorders of clients, which may affect treatment (Heit, 1991). Finally, the majority of the studies that have been conducted have relied entirely on self-report to measure recent drug use and criminal activity, rather than objective measures of use and criminal involvement.

2.1 Lack of Random Assignment

It has been considered unpractical and unethical to randomly assign drug addicts to particular treatment programs (Barr, 1986). Because of this idea and the knowledge that individual programs may have high success rates due to the conditions that led a particular type of client to choose one facility over another (Barr), the difficulty of comparing different models of therapeutic communities has been substantial. In addition, it has been assumed that randomly assigning clients to different treatment modalities would require an enormous number of participants in order "to absorb attrition rates arising from the client-treatment mismatch" (DeLeon, 1990, p.12). It was not until McCusker's study (1995) on the effects of different

durations of stay in TCs that clients were randomly assigned to a particular treatment program. Random assignment eliminates the issue of self-selection, which can be affected by such client attributes as personal motivation, perception of treatment modality, and treatment availability (Hser, 1995).

2.2 Reliance on Self-Report Measures of Drug Use and Crime

The validity of self-reported drug use may be considerably less than previously reported and may vary according to a number of factors. For example, Wish, Hoffman, and Nemes (1997) found that among substance-abusing populations, clients were more likely to report heroin use than cocaine use. The authors further suggest that multiple drug use may often go undetected with the use of self-reports and that the validity of self-reports may be less at follow-up than at intake. Self-reports have been used successfully in psychiatric patient populations; however, such data are less reliable with criminal populations (Steadman, Cocozza, & Melick, 1978; Teplin, Abram, & McClelland, 1994). Stephens and Feucht (1993) also suggest that respondents often misrepresent their drug use in interviews for a variety of reasons.

Although urinalyses are susceptible to error, they are considered a highly accurate measure of recent drug use. Cook, Bernstein, Arrington, Andrews, and Marshall (1995) state that accuracy rates usually exceed 95 percent for all major drugs. False negatives appear about 3 percent of the time, and false positives are almost nonexistent (Visher & McFadden, 1991).

2.3 Low Follow-up Rates

The Walden House Day Treatment Program reported significant positive outcomes for clients in the areas of health, employment, earned income, and illegal activity. But only 58 percent of all clients who remained at Walden House for at least 2 weeks were included in the report (The Walden House Day Treatment Program, 1995). Similarly, fewer than half of all Key graduates participated in the recent study on the effectiveness of the Key and Crest programs (Inciardi et al., 1997). Low follow-up rates present a problem for treatment studies, as it is critical to obtain post-treatment data from as many participants as possible. Interviewing a small subsample at follow-up is likely to bias findings in favor of clients who are located more easily or who are willing to participate in the study. As a result, clients whose lives are more stable may be interviewed more frequently than those whose lives are unstable. A low follow-up rate may exclude clients who are homeless, who are using drugs, or who are involved in criminal activities, all of whom are important members of the sample. Interviewing only those who are easier to find

or more cooperative will likely lead to findings that may not be generalizable to the entire original sample. In order to accurately measure treatment outcome, it is critical to interview the largest number possible of clients who participated in treatment.

II. THE DCI EXPERIMENT

The District of Columbia Treatment Initiative (DCI) was an experiment designed to test the efficacy of providing enhanced inpatient and outpatient treatment of different durations to clients seeking treatment for drug abuse in Washington, DC. The DCI was a cooperative agreement among the DC. Alcohol and Drug Abuse Services Administration (ADASA), the National Institute on Drug Abuse (NIDA), the Center for Substance Abuse Treatment (CSAT), Koba Associates, Inc., in collaboration with the Research Triangle Institute (RTI), the Institute for Behavior Resources (IBR), and Second Genesis, Inc. The treatment programs included two outpatient facilities managed by the IBR staff with abstinence and methadone maintenance modalities, and two inpatient therapeutic community (TC) facilities managed by Second Genesis, an organization with 25 years of experience running TCs. This report focuses on those clients who were randomly assigned to residential therapeutic community programs.

The primary difference between the enhanced and standard TCs was the length of treatment provided. The standard treatment offered 10 months of inpatient treatment followed by 2 months of outpatient services, and the enhanced site offered 6 months of inpatient treatment followed by 6 months of outpatient services. The Center for Substance Abuse Research (CESAR), at the University of Maryland, College Park, was subsequently funded by CSAT¹ to conduct a follow-up study of clients assigned to the Second Genesis residential programs.

1. INTAKE

Persons who sought treatment at the Central Intake Division (CID) run by ADASA or who were ordered by the court to obtain treatment were eligible to volunteer to participate in the DCI. Clients were recruited primarily from:

- Building 12 of the DC General Hospital
- A DC ADASA 24-hour walk-in substance abuse clinic
- The ADASA Criminal Justice Division
- The 7-day drug detoxification ward at the DC General Hospital
- A community resource center in the Marshall Heights Section of DC

¹On a subcontract from Caliber Associates, Inc.

- Waiting lists for Second Genesis programs
- Jails in DC and Lorton, Virginia (DC Correctional Facility).

Enrollment of clients into the research project was integrated into the CID's normal intake process. Clients who had been referred to the CID were first seen in a group orientation conducted by CID staff. Once this orientation was provided, the Diagnostic, Referral and Data Management Unit (DU) staff provided the clients with information about the DCI. The DU intake coordinator explained the purpose of the research project. Once the DU's intake coordinator had explained the details of the project, he would ask if anyone wished to volunteer to participate in the program. Names of those interested were recorded and forwarded to the CID intake coordinator who would, at the end of the client's intake process, write a referral for the patient to be seen at the DU. No records were kept regarding the number of persons who participated in these orientations with which to compute referral rates. The CID was responsible for conducting the medical and physical evaluations and all laboratory tests (including HIV and drug screenings), as well as providing HIV counseling. The CID physicians had the responsibility of stating whether the client required outpatient or residential treatment. Once the need for residential treatment had been established, the DU would contact Second Genesis staff to notify them of the referral to their program. Second Genesis staff would then arrange a meeting and conduct the intake interview using their standard intake format. If the client was deemed eligible for treatment, the Second Genesis intake worker would track the client until he or she was ready for admission. Once the client was ready for admission, Second Genesis contacted the DU staff who randomly assigned the client to one of the two residential treatment sites. This process is described in Exhibit I-1.

1.1 Eligibility Criteria

Eligibility for the study was assessed by Second Genesis staff, based on the following criteria. The client:

- Had to be 18 years or older
- Could not be participating in another drug treatment program
- Could not be on an ADASA restricted list for failure to cooperate in an ADASA managed treatment program.

EXHIBIT I-1 SECOND GENESIS INTAKE PROCESS

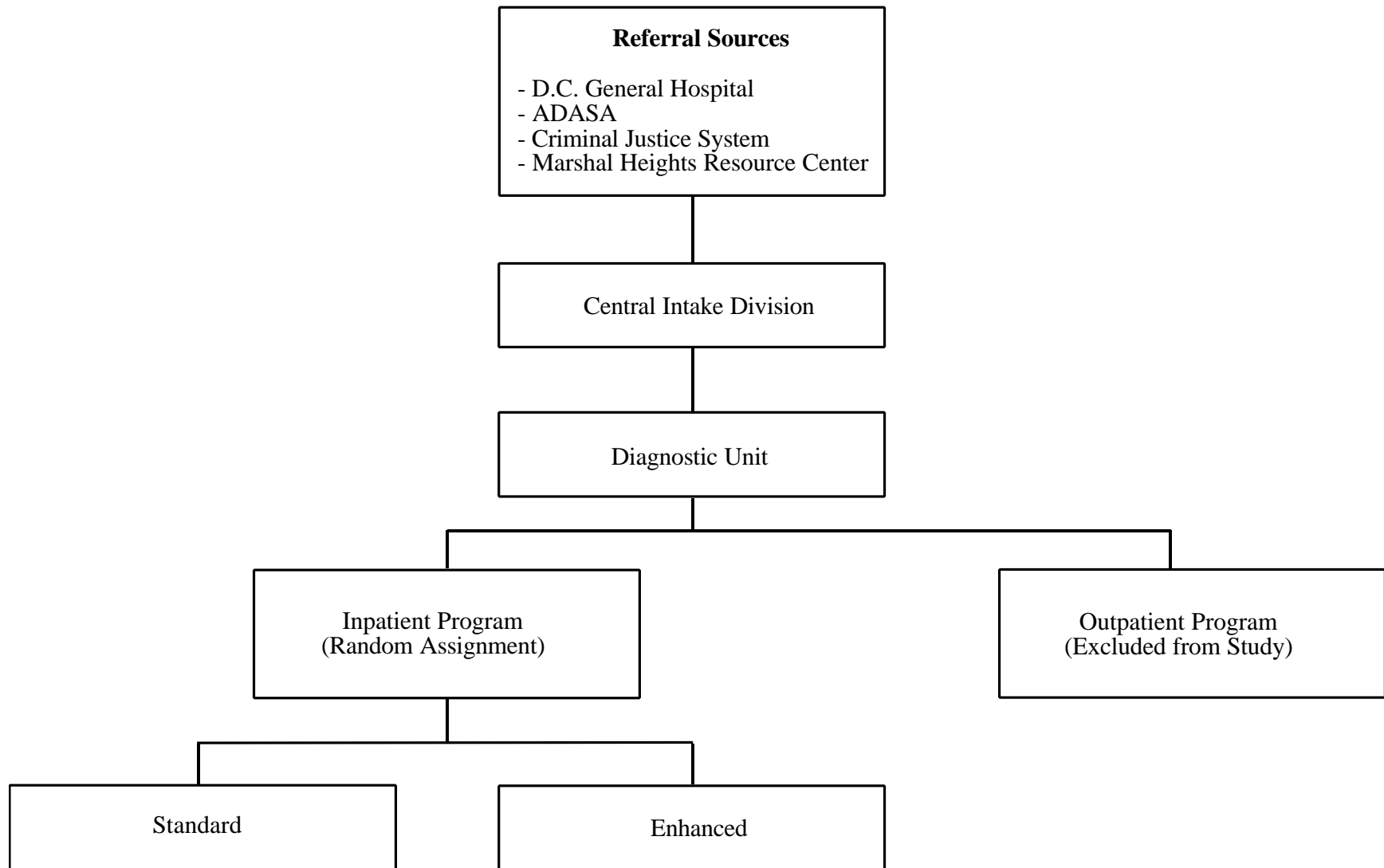


Figure 1

- Could not be suffering from active psychiatric symptoms (e.g., schizophrenia, suicidal thoughts, severe anxiety)
- Could not be pregnant or physically challenged due to the architectural layout and limited medical coverage at the treatment facilities
- Had to be willing to undergo regular drug testing, comply with research interviews, undergo psychological testing, and comply with treatment protocols
- Had to be unable to function in an outpatient treatment setting (due to legal constraints, personal reasons, or repeated outpatient treatment failures)
- Had to be able to spend up to 1 year in the facility
- Could not have any arrests before admission for rape, murder, assault with intent to murder, kidnapping, or other violent acts
- Could not be in need of hospitalization for either detoxification or any other medical problem.

1.2 Random Assignment

The assignment to standard or enhanced treatment was made randomly to minimize differences in clients assigned to the two programs. The RTI staff generated tables consisting of blocks of eight randomized numbers to assign DCI clients randomly between the standard and enhanced conditions. In order to accommodate the realities of community-based research, and to avoid unnecessary vacancies and lengthy waiting lists, four sets of randomized number tables were generated. Two of these sets of tables were used to assign clients to the outpatient programs, and the other two were used to assign clients to the therapeutic communities. The two sets used for the therapeutic communities separated clients by gender. One set was used to assign female clients to either the standard or enhanced TC, and the other was used to assign male clients to either therapeutic community. This was necessary because a specific number of beds were reserved for females in each treatment site.

1.3 Baseline Instruments

Persons who volunteered for the study were sent to the DU, where research staff administered a battery of interviews and psychological measures. The primary instrument used to collect historical information about participants was the Individual Assessment Profile (IAP). The IAP, developed for the DCI by researchers at the RTI (Flynn et al. 1992), was administered to all

participants before assignment to treatment. The IAP is a structured interview based on the longer Drug and Alcohol Treatment Outcome Survey (DATOS) protocol. The IAP asks about many aspects of the client's life, including: demographic information, drug use, treatment history, illegal activity, medical condition, employment, family relations, psychiatric condition, sexual practices, and HIV transmission risk behaviors.

Immediately after the IAP interview, clients received the Reading Comprehension Subtest of the Peabody Individual Achievement Test-Revised (Markwardt, 1989), which measured the client's reading grade level. Clients who were found to be only marginally literate were not asked to proceed with any written psychological tests, but were eligible for treatment. Those who had an appropriate reading grade level were administered a battery of psychological tests which included the:

- Millon Clinical Multi-axial Inventory II (MCMI-II: Millon, 1987)
- Beck Depression Inventory (Beck, 1972)
- Brief Symptom Inventory (BSI: Derogatis, 1992)
- State-Trait Anger Expression Inventory (Spielberger, 1988)
- Trail Making Test (Reitan, 1986)
- Shipley Institute for Living Scale (Zachary, 1991)
- Bender Gestalt Test (Reichenberg & Raphael, 1992)
- Functional Assessment Inventory (Crewe & Athelstan, 1984)
- Minnesota Multiphasic Personality Inventory-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kraemmer, 1989)
- Structured Clinical Interview for the Diagnostic and Statistical Manual-III-R (SCID: Spitzer, Williams, Gibbon & First, 1990).

Exhibit II-2 describes the time line for data collection of the psychological tests. Trained, master's level clinicians administered the psychological tests.

EXHIBIT II-2 DCI MEASUREMENT TIME LINE								
Measurement	Intake	Post Admission						Post Discharge
		Day 1-2	Week 2	Week 3	Month 4	Month 6	Month 12	Month 6+
Individual Assessment Profile	X							
Peabody Individual Achievement Test-Revised	X							
Beck Depression Inventory		X	X			X		
Brief Symptom Inventory		X	X		X	X	X	
Functional Assessment Inventory			X					
Millon Clinical Multi-axial Inventory II			X			X		
State-Trait Anger Expression Inventory			X			X		
Trail Making Test			X					
Structured Clinical Interview for DSM-III-R				X				
In Treatment Experience Interview					X			
Follow-up IAP								X

2. ENHANCED VERSUS STANDARD TREATMENT

Clients were admitted to either facility between February 1992 and January 1994. The basic philosophy of both treatment facilities was similar in that both aimed to develop a sense of responsibility in the client, requiring intense self-discipline for graduation and promoting self-control. The inpatient portion of both treatment programs was designed to be highly structured, supervised, 24-hours per day, and chemical-free. Both programs also incorporated the principles

of Alcoholics Anonymous (AA), and Narcotics Anonymous (NA), with services tailored to meet individual needs. Although offered in different capacities, services offered by both treatment sites consisted of medical, psychiatric, psychological and psychopharmacological treatment, individual and group therapy, addiction education and life skills seminars, self-help and 12-step meetings, health education seminars, vocational counseling and placement, specialized supplementary treatments, and follow-up after treatment. Both facilities were staffed by a multi-disciplinary professional team that included psychiatrists, clinical psychologists, social workers, counselors, and education and family specialists, also in varying capacities. Furthermore, many people on staff had completed treatment programs similar to these, and some had actually graduated from the standard Second Genesis program. Both facilities were located in depressed areas of DC and provided a biopsychosocial relapse prevention approach. During the outpatient period, the focus of both programs was to prevent a relapse of drug use.

Although the two treatment facilities had some basic similarities, they differed on some critical points. The primary difference between the two available treatment modalities was the length of stay in the inpatient and outpatient phases of treatment. The standard treatment facility was designed to reflect residential therapeutic community treatment that was customarily available in the United States, consisting of approximately 10 months of inpatient care followed by 2 months of outpatient care. On the other hand, the enhanced treatment provided 6 months of inpatient care and 6 months of outpatient care. Exhibit II-3 presents some differences between the standard and enhanced programs, according to the original treatment designs. The extent to which each of the planned services were implemented at each treatment site has not been examined.

The standard treatment facility was located on Harvard Street, in Northwest Washington, DC, and had the capacity to house 64 residents, up to 14 of whom could be females. This therapeutic community had been in operation prior to this project and was situated in a townhouse. The clinical staff to client ratio during inpatient treatment was one to seven. It consisted of 10 to 12 months of inpatient services and 1 to 3 months of outpatient services. During outpatient treatment, services consisted primarily of therapy and peer support groups and were offered once per week.

The enhanced treatment facility was located on the grounds of St. Elizabeth's Hospital, in Southeast Washington, DC. This facility shared a campus with several inpatient and outpatient

EXHIBIT II-3 PLANNED DIFFERENCES BETWEEN THE STANDARD AND THE ENHANCED TREATMENT SITES		
DIMENSION	ENHANCED SITE	STANDARD SITE
Location	St. Elizabeth's Hospital, SE District of Columbia	Harvard Street, NW District of Columbia
Inpatient Services		
Length	6 months	10-12 months
Capacity	60 residents (20 females)	64 residents (14 females)
Clinical Staff to Client Ratio	1:4	1:7
Crisis Unit	Yes	No
Medical Services	1/2 time staff physician, in-house	No physician, referred out
Psychiatric Services	1/4 time psychiatrist, in-house	Limited available, referred out as necessary
General Supervision of Psychological Services	Full-time, in-house	Not available
Nursing Services (including medication supervision)	Full-time nurse	1/2 time nurse
Staff Training, Supervision, and Support	In-house and by external staff	External staff only
Non-Clinical Services (e.g., Cooking, Secretarial, Drivers)	Provided by non-clinical staff/residents	Provided by residents only
Work Adjustment Program	Modified (15 hours/week)	Traditional (30 hours/week)
Behavior Management	Emphasizes positive reinforcement	Some use of positive reinforcement
Individual Counseling	Yes	As necessary
Night Coverage (12 a.m.-8 a.m. staff)	Yes	No
Outpatient Services		
Length	6 months	1-3 months
Attendance	2-3 times/week	1 time/week
Individual Counseling	Yes	As necessary
Family Therapy	Yes	As necessary
Group Therapy	Yes	Yes
Peer Support Group	Yes	Yes

psychiatric units, and other substance abuse programs. The enhanced facility was developed specifically for the DCI experiment and included a 20-bed crisis unit for patients needing short-term (1 day to 2 weeks) emergency treatment for psychological or family crises, or detoxification from low-level opiate use, alcohol, or benzodiazepenes. The crisis unit was not intended to provide emergency medical care, but rather to function as an adjunct to the residential unit for cases (not necessarily residential clients) where short-term intervention with a more intensive coverage by professional staff and possible dispensing of medications was indicated.

The enhanced site had the capacity to house 60 residents, up to 20 of whom could be females. The clinical staff-to-client ratio at the enhanced site during inpatient treatment was 1:4. The enhanced facility had a larger staff, including a greater number of experienced health and mental health professionals, in addition to a larger facility staff. Degreed, professional staff included a clinical psychologist, two physicians (including one psychiatrist), and master's degree level counselors and family therapists. This staff configuration provided greater accessibility of general medical, psychiatric, nursing, and clinical therapeutic services.

In addition to the enlarged clinical staff, the enhanced program also employed a non-clinical staff, which included secretaries, drivers/maintenance personnel, cooks, and a dietician. Tasks and functions carried out primarily by staff members in the enhanced program were carried out by residential clients in the standard program.

The enhanced site consisted of 6 months of inpatient services and 6 months of outpatient services. The reduced length of stay in the residential phase of the enhanced program necessitated some general changes in the therapeutic community model, including modification of the work adjustment component, greater access to medical services, an increase in staff involvement in the treatment of each individual, and an intensification in didactic and clinical learning.

During outpatient treatment in the enhanced site, participants received more intense services than in the standard site, and were required to attend 2 to 3 times per week. Services offered included individual, group, and family therapy, as well as peer support groups. Standard treatment only required attendance 1 time per week. The outpatient component in the enhanced site also served to continue treatment not completed in residence, such as family therapy or group psychotherapy, with the same clinicians. This made it necessary to have staff available during evening hours. Clients received additional self-care education not offered in standard treatment, including stress management, relaxation techniques, nutritional counseling, and vocational

counseling. A relapse prevention program, emphasizing the role of substitute addictions was also incorporated into the outpatient portion of treatment, beginning in July 1993.

The enhanced treatment program placed primary therapeutic emphasis on positive reinforcement, with safeguards instituted to prevent excessive use of negative reinforcement. The Standard site also utilized some positive reinforcement but in conjunction with confrontational groups as in traditional therapeutic communities.

The major differences between the two programs were length of planned residential stay and aftercare, a greater number of clinical staff per client at the enhanced site, and a larger percentage of female beds at the enhanced site. Because the length of planned residential stay at the enhanced site was less than that at the standard site, services were designed to be more readily available. The program was designed so clients would receive, at a minimum, the basic services provided by a traditional therapeutic community, but in a shorter period of time.

3. DISCHARGE

In order to complete either treatment, clients were expected to fulfill all requirements of both the inpatient and outpatient portions of treatment. Clients could be discharged early for various reasons, including continued drug use, irregular attendance, unacceptable behavior, or other manifestations of an inability or unwillingness to acceptably participate in treatment. Clients who were incarcerated or who left against program advice and who did not have contact with the program for at least 30 days were discharged. Finally, clients who were referred to another treatment facility or program were also discharged. These rules applied to both treatment programs.

III. THE FOLLOW-UP STUDY

An effort to locate and re-interview all 412 clients who had been randomly assigned to inpatient treatment at admission was begun in January of 1995, 31 months after the first client left treatment. In order to qualify for a follow-up interview, clients needed to have signed a consent form at baseline agreeing to participate in the follow-up portion of the study. Clients also needed to have provided locator information with which to be tracked at follow-up.

The follow-up staff consisted of five interviewers/trackers and one project director, who also conducted interviews and organized the follow-up effort. The staff consisted of interviewers/trackers who were street smart, with life experience in the field and familiar with the DC area. The interviewers'/trackers' primary responsibilities were to locate each client in their caseload and to interview each client while maintaining confidentiality. They also collected hair and urine specimens and documented all attempts to contact the clients.

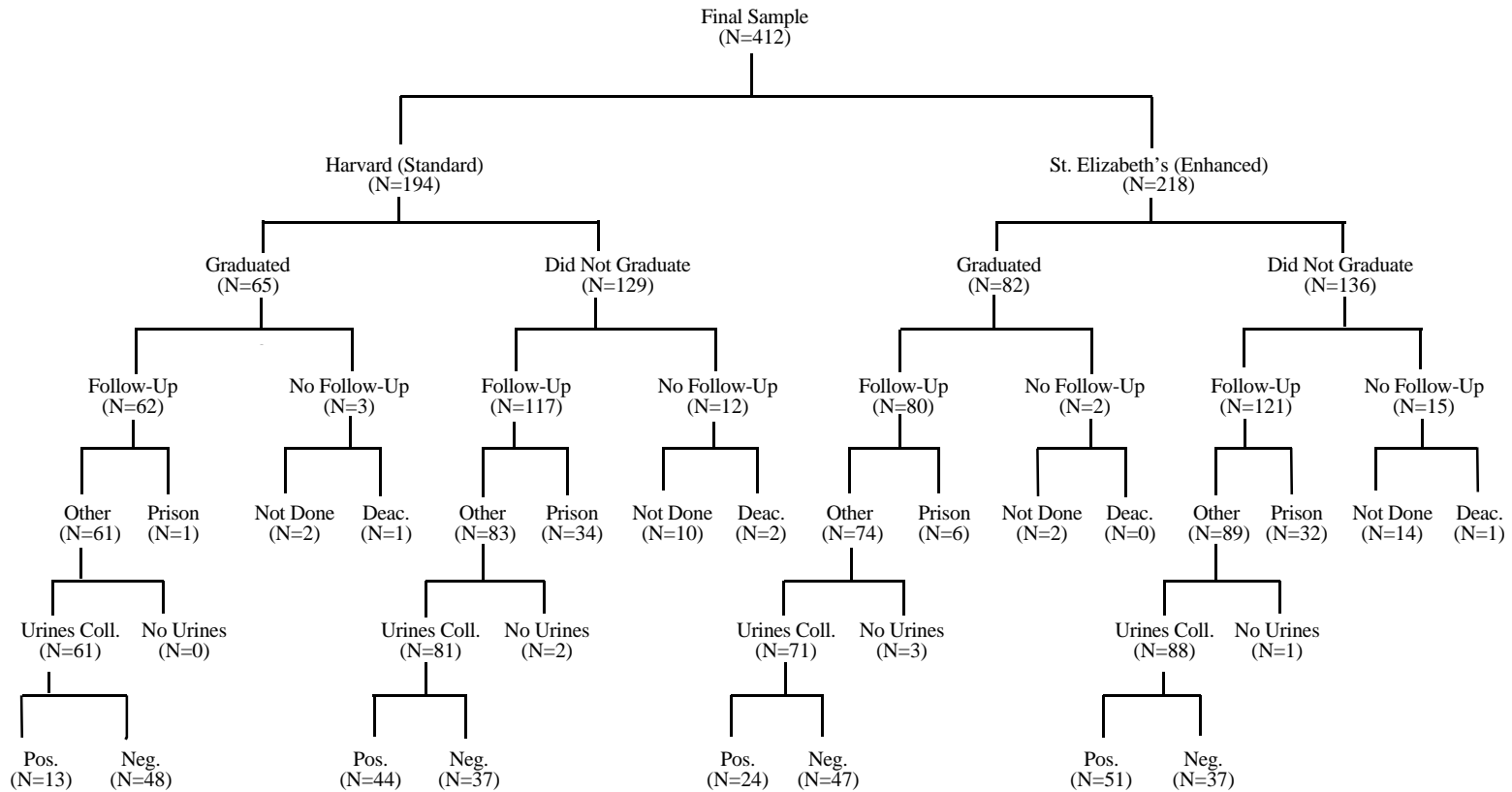
As seen in Exhibit III-1, we successfully re-interviewed 380, or 93 percent of the clients in the target sample (n=408). Four respondents were dropped from the follow-up sample because they passed away prior to being interviewed. Two respondents were contacted but refused to participate, and three respondents were scheduled multiple times but never completed the interview.

In-person interviews were conducted with 74 percent of the respondents. Hair and urine specimens were obtained from 98 percent of respondents who were interviewed in person in the community (n=302). Only one respondent refused to provide both biological specimens. As seen in Exhibit III-2, there were no differences in follow-up or specimen response rates by treatment site.

1. LOCATING RESPONDENTS

Various techniques were used to try to reach the respondents, including mailing letters to addresses provided; phoning respondents, family members and friends; visiting addresses listed; conducting street outreach in respondents' neighborhoods; identifying respondents' whereabouts through the criminal justice system; and locating respondents with information provided by other respondents.

EXHIBIT III-1 FINAL SAMPLE FLOW CHART



*Other: At Koba, Client's home, or by phone

**No Urines: Phone interview or refused

EXHIBIT III-2				
FOLLOW-UP AND SPECIMEN RESPONSE RATES				
Interview Description	Standard (N=191^a)		Enhanced (N=217^a)	
	f	%	f	%
Interviewed:				
In Person, in Community	142	74	160	74
In Person, in Prison	33	17	36	16
Telephone, in Community	2	1	3	1
Telephone, in Prison	2	1	2	1
Total Interviewed	179	94%	201	93%
Not Interviewed:				
Not Located	9	5	14	6
Scheduled/Did Not Show	2	1	1	<1
Refused Interview	1	<1	1	<1
Total Not Interviewed	12	6%	16	7%
Interview Description	Standard (N=142)		Enhanced (N=160)	
	f	%	f	%
Of Persons Interviewed in Person in Community, Provided:				
Hair and Urine	140	99	157	98
Urine Only	2	1	2	1
Neither	0	0	1	1
Hair Only	0	0	0	0
Total Specimen Provided	142	100%	160	100%

^a Three respondents from the standard site and one from the enhanced site died during the process of tracking them. These four respondents were not included in the calculated follow-up rates.

All follow-up interviews were conducted at the field site, in the respondent's home, in prison (n=73), or at another location agreeable to both the interviewer and the respondent. The field site was located in DC, at a shopping center near a Metro stop. This proved to be very convenient as some clients did not have cars and traveled on the Metro. Furthermore, the supermarket where

clients could use their food vouchers was also located in the same shopping mall. The location was selected as one that afforded privacy for the respondent and that was safe for both parties. In a few cases (n=9), when the respondent lived far away and an in-person interview was not possible, phone interviews were conducted. These nine phone interviews include four respondents who were incarcerated too far away to be interviewed in person. Appendix A provides more details about the extensive efforts made to contact respondents.

2. FOLLOW-UP INSTRUMENTS

At follow-up, respondents were again asked to sign an informed consent form and were then interviewed with a follow-up version of the IAP (IAPF, presented in Appendix B). The IAPF was modeled after the IAP baseline version and contained questions about the same aspects of the client's life. These aspects included: demographic information, drug use, treatment history, illegal activity, medical condition, employment, family relations, psychiatric condition, sexual practices, and HIV transmission risk. A special section was added to the IAPF that allowed clients to evaluate the treatment received at Second Genesis. Because the follow-up period differed across the sample (ranging from 6 months to 3 years, with an average of 19 months), the IAPF was designed to ask about two time periods. These two time periods were the 6 months following treatment, to allow a sufficient time period to evaluate post-treatment outcome, and 3 months prior to the follow-up interview, as a current outcome measure. Thus, outcome measures for the time immediately following treatment and during the 3 months prior to interview were available for all interviewed respondents. A slightly different time frame was used when interviewing clients who were in prison. Because many of the questions asked by the IAPF would not have applied in the controlled environment of prison, the focus of the prison interviews was on the time during which clients were not incarcerated. Questions were still asked about the 6 months following treatment, not including time incarcerated, and they were asked about the 3 months prior to being incarcerated rather than the 3 months prior to the follow-up interview.

3. BIOLOGICAL SPECIMENS

Respondents were also asked to sign an informed consent form and, if they agreed, to provide scalp or body hair and urine specimens, which were sent to separate laboratories for analysis. Urine specimens were sent to PharmChem and hair specimens were sent to U.S. Drug Testing for analyses. The hair was collected as an additional measure of drug use in the 90 days prior to interview, and the urine was collected as an additional measure of drug use in the 3 days prior to interview. These specimens were also collected to assess the validity of self-reports of

recent drug use obtained in the IAPF interview. Hair and urine specimens were not sought from respondents who were interviewed in prison or by phone. Participants were offered a monetary incentive of \$25 in either food gift certificates or cash for participating in the follow-up study and for providing hair and urine specimens.

4. ARREST RECORDS

Study participants were also asked to sign a release form that provided access to their criminal records. This information was collected as an additional measure of criminal activity and as a way to assess the validity of self-reported criminal activity. Criminal record information was sought from local jurisdictions. Data on adult criminality were collected for the pre- and post-treatment periods for all study participants by two experienced Pretrial Services staff members. The form which was used to record arrest data is presented in Appendix B. Arrests that may have occurred during treatment were also recorded. Information on criminal history was obtained via the Automated Bail Agency Data Base (ABADABA) and institutional files from the DC. Pretrial Services Agency². Charges incurred outside the state were collected from the Interstate Identification Index Program (III).

Respondents were matched to their records by using their name, birth date, birthplace, Social Security number, driver's license number, and District of Columbia Department of Corrections number (DCDC number). This is a unique number that is assigned to each detainee. Police Department Identification (PDID) numbers were also used when available. Information obtained from Pretrial Services included the total number of adult arrests for each respondent, and the date of every arrest with corresponding charges. Arrest charges were coded to match the criminal history chart included in the follow-up interview and are presented in Table B-1 (Appendix B). The next chapter presents the results of our study.

²We are indebted to Mr. Jay Carver, former Director of DC. Pretrial Services Agency for allowing us to collect this information.

IV. RESULTS

The main goal of this study was to compare clients from the two treatment programs (standard and enhanced) on functioning at follow-up, including drug use, criminal activity, and employment status. This section of the report presents the results of analyses conducted to achieve this goal. The first part of the section presents the results of analyses conducted to examine the effectiveness of the random assignment, differences in characteristics of respondents interviewed at follow-up and those not interviewed, and differences between respondents interviewed in prison and those interviewed in the community. The second part of this section addresses the effectiveness of treatment received at each type of program as measured by respondent drug use, criminal activity, and employment status at follow-up.

1. DESCRIPTIVE ANALYSES

A number of analyses were conducted to examine the effectiveness of the random assignment, to compare respondents who were interviewed at follow-up to those who were not, and to compare respondents interviewed in prison to those interviewed in the community. A summary of the findings is presented in this section.

1.1 Effectiveness of Random Assignment

Clients at the standard and enhanced sites were compared at admission to ensure that random assignment resulted in similar clients in each program; 461 clients were found to be eligible and agreed to participate in the study. The original sample consisted of 470 participants, but nine clients were subsequently removed from the study because it was discovered that they did not meet the DCI admission criteria, or because they left before receiving the IAP. Of these 461 participants, 412 were randomly assigned to one of the two residential drug abuse treatment facilities between February 1992 and January 1994. The last 49 clients to enter treatment, toward the end of the experiment, were not randomly assigned so that treatment facilities could be filled. These 49 clients were dropped from the study. A total of 194 of the remaining 412 clients were assigned to the standard program and 218 were assigned to the enhanced program.

Exhibit IV-1 presents a comparison of some demographic characteristics of the standard and enhanced clients. The random assignment resulted in few differences in the characteristics of the two groups at admission. The two groups did not differ in ethnicity, age, employment history, educational level, family status, or psychological diagnoses. Both groups consisted primarily of black respondents in their early 30s. The majority of the respondents had held

EXHIBIT IV-1		
DEMOGRAPHIC CHARACTERISTICS AT ADMISSION, BY TREATMENT PROGRAM		
(N=412)		
Characteristic	Standard (N=194^a)	Enhanced (N=218^a)
Male	77%*	67%*
Black	98%	98%
Mean Age at Admission (s.d.)	31.7 (6.8)	32.6 (6.5)
Ever worked legitimate job	89%	91%
Highest Grade Attended (Mean)	10.9 years	10.8 years
Marital Status:		
■ Never Married	71%	68%
■ Married/Living Together	16%	17%
■ Divorced/Separated/Widowed	13%	15%
Total Marital Status	100%	100%
Children:		
■ Males Raising Children	28%	37%
■ Females Raising Children	20%	34%
Hierarchical Psychological Diagnoses ^b (N=338):		
■ No Disorder	21%	18%
■ Provisional Only	10%	11%
■ Other Disorders	11%	8%
■ Depression	7%	15%
■ APD ^c	41%	35%
■ APD ^c +Depression	10%	13%
	} 79%	} 82%
Total Diagnoses	100%	100%

^a n's vary slightly due to missing data.

^b Each diagnostic category presented includes those previously mentioned.

^c Antisocial Personality Disorder.

* p<.05

legitimate jobs in the past, had attended nearly 11 years of school, and had never been married. About half the sample was diagnosed with either Antisocial Personality Disorder (APD) or APD and depression.

The only significant difference found between the two groups at admission was with regard to gender. More of the standard treatment clients were males (77% vs. 67%, $p < .05$). This difference was expected because at the standard treatment site, 14 (22%) of the 64 available beds were reserved for women, while at the enhanced site 20 (33%) of the 60 beds were reserved for women.

Exhibit IV-2 shows that drug use prior to admission was also similar for clients assigned to each of the programs. Both groups reported high rates of illegal drug and alcohol use, with crack being the most frequently cited serious drug problem. The most commonly used drug reported by both groups was cocaine, followed by alcohol, and less than one-half of each group reported using heroin. About one-third of the members of both groups reported injecting drugs and approximately half of the participants had received treatment for alcohol/drug problems prior to Second Genesis.

Exhibit IV-3 shows the self-reported criminal history at admission for the two groups. While the two groups had similar criminal histories on a number of dimensions, clients assigned to standard treatment reported a greater number of juvenile arrests (2.7 vs. 1.8, $p < .05$) and a greater mean number of adult convictions (3.7 vs. 2.9, $p < .05$). The reasons for these differences are unclear. These self-reported findings could not be validated by criminal records as juvenile criminal record data were not available and the data collected for adults focused on arrests, rather than on convictions. The groups did not differ on any other aspects of their criminal histories, however.

EXHIBIT IV-2		
SELF-REPORTED DRUG USE AT ADMISSION, BY TREATMENT PROGRAM		
(N=406)		
Drug Use	Standard (n=194)	Enhanced (n=218)
Drugs Used Five or More Times in Life:		
■ Cocaine	94%	94%
■ Alcohol	91%	86%
■ Crack	82%	81%
■ Marijuana	84%	84%
■ Hallucinogens	55%	54%
■ Heroin	41%	41%
Most Serious Drug Problem:		
■ Crack	52%	51%
■ Heroin	16%	21%
■ Cocaine	15%	16%
■ Ever Used Needles to Inject Drugs	31%	32%
■ Ever Received Prior Tx for Alcohol/Drugs	48%	50%

EXHIBIT IV-3		
SELF-REPORTED CRIMINAL HISTORY AT ADMISSION, BY TREATMENT PROGRAM (N=412)		
Criminal History	Standard (N=194)	Enhanced (N=218)
Criminal Justice Status:		
<ul style="list-style-type: none"> ■ On Probation ■ On Parole ■ Other Status^a ■ No Criminal Status 	54% } 12% } 70% 4% } 30% }	59% } 10% } 73% 4% } 27% }
	100%	100%
Ever Arrested	90%	91%
Mean Age at First Arrest	19.9 years	20.2 years
Mean Number of Juvenile Arrests	2.7*	1.8*
Mean Number of Adult Arrests	7.3	7.1
Ever Arrested For:		
<ul style="list-style-type: none"> ■ Sales of drugs ■ Possession of Drugs ■ Probation/Parole Violations ■ Larceny ■ Burglary ■ Robbery ■ Weapons Offenses 	62% 55% 37% 32% 22% 22% 20%	60% 58% 29% 24% 23% 21% 16%
Mean Number of Adult Convictions	3.7*	2.9*
Total Supported by Illegal Activities	59%	52%
Mean Time in Jail in Lifetime	3.3 years	2.9 years
Mean Time in Jail in Past Year	4.9 months	5.0 months

^a Includes awaiting sentence/trial, on bail, case pending, and any other status.

*p < .05.

In summary, the differences found between clients in the two treatment programs at admission were minimal. The only demographic difference was that the standard treatment consisted of more male clients, which is explained by the larger number of female beds assigned to that program. No differences in drug/alcohol use and treatment history were found at admission between the groups. Differences were found on two self-reported criminal history variables out of the 10 that were compared and could not be validated by criminal justice records. Standard treatment clients reported a greater number of juvenile arrests and adult convictions. With this minor exception, we conclude that the random assignment yielded two very similar groups of clients at admission. Comparison of treatment outcomes in the two programs should therefore not be biased by differences that existed between the two groups at admission.

1.2 Followed-up Sample Versus Not Followed-up Sample

The sample of respondents who were interviewed at follow-up were compared to those not interviewed at follow-up to determine if those not interviewed differed from those who were interviewed (See Tables C-1 through C-3, in Appendix C). The only difference in the demographic characteristics of the two groups was found in ethnic composition. While the overwhelming majority of both groups were black, the sample of those who were interviewed consisted of a greater percentage of black respondents (99% vs. 84%, $p < .01$). Differences were not found between groups with regard to history obtained from criminal justice records. We did find, however, that a greater percentage of persons followed-up had completed both inpatient and outpatient treatment (37% vs. 16%, $p < .05$). This is to be expected because completers of both phases of treatment are probably more stable and accessible to re-interview. Given our high response rate (93%), we believe that this difference does not seriously bias the results.

1.3 Comparison of Prison and Non-prison Respondents

Respondents interviewed in prison at follow-up were expected to differ from those not in prison, particularly with regard to involvement in criminal activity. Results support this hypothesis. Tables C-4 through C-7 (Appendix C) compare incarcerated respondents to those interviewed in the community. Compared with non-prison respondents, clients in prison at follow-up were more likely to be younger males with less education, to have more extensive criminal histories, and to be less likely to complete treatment. Prison respondents were only included in analyses when appropriate. For example, prison respondents were excluded when analyzing urine specimens because specimens were not sought from them.

2. RESEARCH QUESTIONS

One of the main questions which this report examines is the effectiveness of treatments with different durations of inpatient treatment. Because clients were randomly assigned to both programs, and since random assignment seems to have yielded similar groups at admission, treatment effectiveness can be measured by comparing clients in the two programs at follow-up. As seen in the previous section, both programs were composed of clients with severe histories of substance abuse, criminal involvement and impaired social functioning at admission. All three of these are considered critical predictors of outcome following treatment and substantial attention is brought to these topics in our analyses. The impact of treatment completion on client outcome is also very important. This report, therefore, addresses the following three questions: (1) Did the standard and enhanced clients have different treatment outcomes? (2) Was treatment completion related to treatment outcome? (3) What factors predicted treatment completion, post-discharge recidivism, drug test results and employment status at the time of follow-up?

2.1 Standard Versus Enhanced Treatment Outcomes and Completion

A major goal of the DCI was to assess whether clients assigned to programs with different amounts of inpatient treatment would have different outcomes. Standard and enhanced clients were compared to determine whether the type of treatment program was related to outcome. Later on we will use multivariate analyses to control for variables that may be related to outcome.

Employment and Drug Use, at Follow-Up, by Treatment Site

Exhibit IV-4 compares employment and substance use at follow-up among clients in each program. Results indicated that standard program clients not currently in prison were more likely to report being employed at a legitimate job at follow-up than were enhanced program clients (72% vs. 56%, $p < .01$). However, about half of the standard and enhanced program clients interviewed in prison reported being employed 3 months prior to incarceration.

Self-reported post-discharge drug use was similar in both groups, except for heroin use. Fewer standard program clients reported using heroin post-discharge (7% vs. 15%, $p < .05$). But, the urinalyses, which measured drug use in the 3 days prior to follow-up, indicated that there were no differences in recent opiate use by treatment site at follow-up. Both self-report and

EXHIBIT IV-4		
STATUS AT FOLLOW-UP, BY TREATMENT PROGRAM		
Status	Standard	Enhanced
Employment:		
■ Currently Employed, Non-Prison	(n=144 ^a)	(n=163 ^a)
■ In Prison, Employed 3 Months Prior to Interview	72% ** (n=34) 50%	56% ** (n=36) 56%
Self-Reported Post-Discharge Drug Use Of:	(n=178)	(n=201)
■ Cocaine	37%	41%
■ Crack	33%	40%
■ Alcohol	34%	35%
■ Marijuana	16%	18%
■ Heroin	9% *	15% *
Urinalyses at Follow-Up, Positive for:	(n=142 ^b)	(n=159 ^b)
■ Cocaine/Crack	33%	39%
■ Marijuana	10%	6%
■ Alcohol	10%	6%
■ Opiates	7%	13%

* p < .05.

**p < .01.

^a Excludes respondents in prison and respondents not interviewed at follow-up.

^b Excludes respondents in prison, respondents interviewed by phone, respondents not interviewed, and one respondent who refused to provide urine specimen.

urinalyses indicated that cocaine or crack was the drug used by the most persons (about one-third) post-discharge and at follow-up. Less than 15 percent of both groups tested positive for opiates.

Post-Discharge Criminal Behavior, by Treatment Site

Exhibit IV-5 shows criminal behavior information obtained by interview and records. About half of the participants in both treatment programs reported being either in prison, on probation or parole, or on pre-trial release when interviewed at follow-up. These findings were supported by the criminal record information. Exhibit IV-5 also shows that a greater percentage of enhanced program clients reported being arrested in the 6 months following treatment discharge (25% vs. 14%, p<.01). Criminal justice records also support this difference (26% vs. 17%, p<.05). Furthermore, following treatment discharge, clients who attended enhanced treatment were arrested sooner than clients who attended standard treatment (mean=6.9 months vs. 9.4 months, p<.05). Clients in the two treatment programs did not differ with regard to arrest

history since the beginning of treatment. Both groups of clients reported being arrested an average of one time since admission to treatment.

EXHIBIT IV-5		
CRIMINAL STATUS AT FOLLOW-UP, BY PROGRAM		
(INCLUDES RESPONDENTS IN PRISON AT FOLLOW-UP)		
Status	Standard	Enhanced
Self-Reported Status at Follow-Up (n=380)		
In Prison, on Probation/Parole or on Pre-trial Release	50%	52%
Arrested 6 Months Post Discharge	14% **	25% **
Criminal Justice Records Based Status at Follow-Up (n=412)		
In Prison, on Probation/Parole or on Pre-trial Release	53%	55%
Arrested 6 Months Post Discharge	17% *	26% *
Mean Time from Discharge to First Arrest (in months)	(n=88) 9.4*	(n=122) 6.9*
Number of Arrests Following Admission	1.0	1.3
Mean Time from Admission to First Arrest (in months)	(n=88) 15.9	(n=122) 14.7

*p<.05.

**p<.01.

Treatment Completion by Treatment Site

Exhibit IV-6 shows that 33 percent of the standard program clients and 38 percent of the enhanced program clients completed both inpatient and outpatient treatment. Treatment completion is defined as fulfilling all requirements of both the inpatient and outpatient phases. Enhanced clients were more likely to complete the inpatient phase (32% vs. 9%, p<.01). This was expected because the inpatient phase for the enhanced program lasted only 6 months compared with 10 months for the standard program. Furthermore, according to the treatment

EXHIBIT IV-6		
TREATMENT COMPLETION, BY PROGRAM (N=412)		
Status	Standard (N=194)	Enhanced (N=218)
Phases Completed:		
Inpatient and Outpatient	33%	38%
Inpatient Phase Only	9%	32%
Neither Inpatient/Outpatient	58%	30%
	100%	100%
Mean Time Spent in (in months):		
Inpatient Phase	7.4**	5.5**
Outpatient Phase ^a	0.8**	3.1**
Total Inpatient and Outpatient	8.2	8.6

**p < .01.

^a Includes 179 people who did not attend outpatient phase.

plan, standard clients spent more time in the inpatient phase (7.4 vs. 5.5 months, p<.01) and less time in the outpatient phase (1.9 vs. 4.5 months, p<.01).

Summary

Our analyses indicate that the enhanced and standard program clients differed in four important areas: employment status, heroin use, criminal involvement, and completion of the inpatient phase of treatment. In terms of treatment completion, enhanced program clients were more likely to complete their shorter, inpatient phase. Standard program clients had more positive outcomes in employment, as evidenced by a greater percentage of their clients being employed at follow-up. Also, a smaller percentage of standard program clients reported using heroin at follow-up. Standard treatment clients also had less criminal involvement following treatment discharge and were arrested later than enhanced clients.

2.2 Outcomes, by Treatment Completion and Program

Up to this point, we have compared clients from the two programs, without regard to program completion. This section examines client outcomes according to treatment completion

status. Clients from both treatment programs were combined for these analyses because findings were similar when each treatment program was examined individually (See Appendix D)³.

Drug Use, by Treatment Completion

Exhibit IV-7 shows that clients who completed both inpatient and outpatient treatment reported less illegal drug (marijuana, cocaine, crack, heroin) and alcohol use at follow-up, when compared to clients who completed only the inpatient phase or neither phase of treatment. Urinalyses, which measure drug use 3 days prior to interview, also indicate less cocaine/crack use at follow-up when comparing treatment completers to non-completers [18% of completers positive vs. 53% (completed inpatient) and 49% (completed neither), $p < .01$]. Hence, both self-reports and the urinalyses point to a substantial difference in cocaine/crack use for completers. This represents an impressive reduction, because cocaine/crack had been used by the large majority of the sample prior to treatment and was identified by most clients as the most problematic drug at admission. Reductions were found when comparing completers and non-completers in either treatment program, suggesting that completing either treatment program may have been more important than which treatment regimen was offered.

Criminal Activity, by Treatment Completion

There was a significant reduction in self-reported arrests 6 months following treatment when treatment was completed (6% of completers vs. 35% and 24% of non-completers, $p < .01$). These findings were confirmed by arrest records.

³The two differences that were identified between the treatment groups are the following: 1) A smaller percentage of clients who completed both inpatient and outpatient phases in the standard program reported heroin use at follow-up when compared to clients who only completed the inpatient phase; and, 2) A larger percentage of standard program completers reported having no criminal status (in prison, on probation/parole, or on pretrial release) at follow-up when compared to non-completers. This difference was not confirmed by criminal records and was not found at all in the enhanced program clients.

EXHIBIT IV-7			
DRUG USE AND CRIMINAL BEHAVIOR AT FOLLOW-UP, BY COMPLETION STATUS			
Drug Use and Criminal Behavior	Completed Inpatient & Outpatient (%)	Completed Inpatient Only (%)	Completed Neither (%)
Used Drugs Post Discharge (Self-Reports)			
	(N=141)	(N=76)	(N=161)
Alcohol	18**	46**	43**
Marijuana	07**	22**	23**
Cocaine	16**	50**	55**
Crack	15**	45**	52**
Heroin	08**	24**	11**
Positive Urine Test Results^a			
	(N=131)	(N=59)	(N=110)
Alcohol	6	9	10
Marijuana	7	7	10
Cocaine/Crack	18**	53**	49**
Heroin	12	12	06
Criminal Justice Status (Self-Report)			
In Prison, on Probation/Parole or on Pre-trial Release	(141) 44	(76) 57	(162) 55
(Records)			
In Prison, on Probation/Parole or on Pre-trial Release	(139) 51	(75) 59	(162) 54
Arrested 6 Months Post Discharge			
Self-Report	(141) 6**	(74) 35**	(161) 24**
Criminal Justice Records	(146) 9**	(87) 31**	(178) 28**

**p < .01.

^a Excludes respondents in prison or respondents interviewed by phone.

Summary

Results consistently indicate that completing both the inpatient and outpatient phases of treatment led to improved outcomes at follow-up, particularly reduced drug use and decreased criminal activity. Completing only the inpatient phase of treatment or completing neither phase led to less improvement at follow-up. These findings were seen across the entire sample and in both treatment programs, indicating that the specific treatment program attended may be less crucial in leading to improved outcome than the completion of whichever program is attended.

2.3 Multivariate Analyses of Predictors of Treatment Completion, Recidivism, Positive Urinalysis, and Employment at Follow-up

Bivariate analyses were conducted to examine the relationship of demographic variables (gender, age, marital status, education, and employment history), psychological diagnoses, criminal history, and drug use and treatment history with treatment completion, recidivism, and positive urinalysis. The results of these analyses, presented in Appendix E, were used to identify variables to be controlled for in subsequent logistic regression models.

Predictors of Recidivism

Although previously presented bivariate results indicated less criminal activity post-discharge in standard program clients when compared to enhanced program clients, this difference did not remain significant when other factors, which could be related to recidivism at follow-up, were controlled in the regression model. It is noteworthy that when these other variables were controlled, including demographics, drug use and treatment history, criminal history, and time to coding of criminal records, treatment program attended was not related to recidivism at follow-up.

Regression results indicated that the significant correlates of recidivism were age, prior arrests, criminal status at admission, treatment completion status, and time to arrest history coding, which controls for time at risk (see Exhibit IV-8). Controlling for other factors, increased age, and treatment completion remained significantly related to reduced recidivism. That is, for each year, increase in age, the odds of recidivating were reduced, and if a respondent completed both inpatient and outpatient treatment, the odds of re-arrest were also decreased, compared to clients who completed neither phase.

EXHIBIT IV-8					
LOGISTIC REGRESSION ASSESSING RECIDIVISM (N=327)					
Variable	B	S.E.	df	Sig.	Exp (B)
Gender:					
■ [Male]					
■ Female	-.5960	.3407	1	.0803	.5510
Age	-.1160	.0279	1	.0000**	.8905
Highest Grade Attended	-.0168	.0742	1	.8209	.9833
Marital Status:			2	.6338	
■ [Never Married]					
■ Divorced/Separated	-.0729	.3802	1	.8479	.9297
■ Married/Living Tog.	-.4054	.4249	1	.3401	.6667
Prior Arrests	.0517	.0231	1	.0248*	1.0531
Criminal Status:					
■ [No]					
■ Yes	.7129	.3269	1	.0292*	2.0399
Primary Drug Diagnoses:			3	.8724	
■ [Heroin+Cocaine]					
■ Alc/Marij/PCP	-.2109	.7504	1	.7786	.8098
■ Heroin	.2213	.8066	1	.7838	1.2477
■ Cocaine	-.2217	.3127	1	.4785	.8012
Treatment Site:					
■ [Standard]					
■ Enhanced	.5228	.2895	1	.0709	1.6868
Prior Tx For Drugs/Alc.:					
■ [No]					
■ Yes	.3860	.2820	1	.1710	.6797
Treatment Status:			2	.0001**	
■ [Completed Neither]					
■ Completed Both	-1.2201	.3502	1	.0005**	.2952
■ Completed Inpatient	.1335	.3986	1	.7374	1.1429
SCID Diagnoses:			5	.0759	
■ [No Disorder]					
■ Provisional Only	-.0059	.5208	1	.9909	.9941
■ Other Disorders	-.5458	.5471	1	.3184	.5794
■ Depression	.9038	.5596	1	.1063	2.4690
■ APD	-.4292	.3761	1	.2538	.6510
■ APD+Depression	-.4926	.5151	1	.1239	.4527
Time/Months	.0634	.0212	1	.0027**	.0654
Constant	2.2495	1.3464	1	1.0948	

*p<.05; **p<.01; [Brackets]: indicate reference category.

A few factors were related to increased rearrests after discharge. Previous criminal history, including criminal status at admission (parole, probation, pre-trial release), and a greater number of arrests prior to admission were associated with increased arrests at follow-up. Also, for each additional month between treatment admission and arrest history coding, the odds of recidivating were increased.

Predictors of Positive Cocaine Urinalysis

About one-third of the sample tested positive for cocaine, by urinalysis, at follow-up. Analyses were conducted to identify predictors of a positive urinalysis for cocaine at follow-up. The multivariate findings support the bivariate results in that treatment program attended was not a significant predictor for a positive cocaine urinalysis at follow-up. At baseline, the majority of the sample reported that cocaine/crack was their most serious drug problem, and at follow-up only about one-third of the sample tested positive for cocaine/crack. This indicates a reduction in the overall sample, regardless of the specific treatment program attended.

Significant correlates of a positive urinalysis for cocaine at follow-up were primary drug diagnosis at admission, treatment status, and a positive urinalysis for opiates (see Exhibit IV-9). In the logistic regression, those diagnosed with cocaine dependence at admission were more likely to provide urine specimens that tested positive for cocaine at follow-up, when compared to those diagnosed dependent on cocaine and heroin. Opiate use at follow-up was also related to cocaine use at follow-up, as those testing positive for opiates were also more likely to test positive for cocaine. The third factor associated with a positive cocaine urinalysis at follow-up was dropping out of treatment prior to the completion of both phases of treatment. No difference was found between those who completed only the inpatient portion of treatment and those who completed neither portion of treatment in terms of positive urinalysis at outcome.

Other factors not significantly related to testing positive for cocaine at follow-up were: age, gender, education, total number of prior arrests, criminal status at admission, prior treatment, and as previously mentioned, treatment program attended.

Predictors of Positive Opiate Urinalysis

Less than 15 percent of the sample tested positive for opiates by urinalysis at follow-up. Although previous bivariate analyses indicated that there was a greater reduction in self-reported heroin use at follow-up in standard program clients, this difference did not remain significant

when analyses were conducted controlling for other variables which may be related to positive opiate urinalysis. These control variables included demographics, criminal history, and drug use and treatment history. As in the cocaine urinalysis findings, treatment program was not a significant predictor of opiate use at follow-up by urinalysis.

EXHIBIT IV-9					
LOGISTIC REGRESSION ASSESSING POSITIVE COCAINE URINALYSIS (N=246)					
Variable	B	S.E.	df	Sig.	Exp (B)
Gender:					
■ [Male]					
■ Female	-.5608	.3624	1	.1218	.5707
Age	-.0307	.0294	1	.2970	.9698
Highest Grade Attended	-.0033	.0812	1	.9679	.9967
Prior Arrests	-.0236	.0281	1	.4009	.9766
Criminal Status:					
■ [No]					
■ Yes	-.0574	.3613	1	.8738	.9442
Primary Drug Diagnoses:			3	.0685	
■ [Heroin+Cocaine]					
■ Alc/Marij/PCP	-5.7949	12.0206	1	.6297	.0030
■ Heroin	.5512	1.2460	1	.6582	1.7354
■ Cocaine	.9817	.3758	1	.0090**	2.6689
Prior Tx for Drugs/Alc.:					
■ [No]					
■ Yes	.0977	.3280	1	.7657	1.1027
Treatment Status:			2	.0000**	
■ [Completed Neither]					
■ Completed Both	-1.5448	.3974	1	.0001**	.2134
■ Completed Inpatient	.4960	.4339	1	.2530	1.6421
Treatment Site:					
■ [Standard]					
■ Enhanced	.2235	.3380	1	.5084	1.2505
Positive for Opiates:					
■ [No]					
■ Yes	2.633	.5322	1	.0000**	10.6260
Constant	.2746	1.2492	1	.8260	

*p<.05.

**p<.01. [brackets]: indicate reference category.

The significant correlates of a positive urinalysis for opiates were gender, primary drug diagnosis at admission, and a positive urinalysis for cocaine at follow-up (see Exhibit IV-10). Females were more likely to test positive for opiates at follow-up. Other factors associated with a positive urinalysis at follow-up were similar to those associated with a positive cocaine urinalysis at follow-up. As was found above for cocaine urinalysis, those diagnosed with cocaine dependence at admission were more likely to test positive for opiates at follow-up, when compared to those diagnosed with a dependence on cocaine and heroin. Also, cocaine use at follow-up was related to opiate use at follow-up, as those who provided urine specimens positive for cocaine were more likely to provide urine specimens positive for opiates.

On the other hand, unlike the cocaine urinalysis findings, treatment completion was not a factor which predicted positive opiate urinalysis. This result may be based on a minority of the sample (less than half) reporting heroin use prior to treatment. Furthermore, only about one-fifth of the sample reported heroin as their most problematic drug at admission. Other variables that did not significantly predict a positive urinalysis for opiates at follow-up included age, education, total number of prior arrests, criminal status at admission, prior treatment, and treatment site.

EXHIBIT IV-10					
LOGISTIC REGRESSION ASSESSING POSITIVE OPIATE URINALYSIS (N=246)					
Variable	B	S.E.	df	Sig.	Exp (B)
Gender: ■ [Male] ■ Female	1.1598	.5536	1	.0362*	3.1892
Age	.0078	.0411	1	.8499	1.0078
Highest Grade Attended	.0795	.1307	1	.5429	1.0828
Prior Arrests	.0430	.0384	1	.2638	1.0439
Criminal Status: ■ [No] ■ Yes	.3114	.6190	1	.6149	1.3653
Primary Drug Diagnoses: ■ [Heroin+Cocaine] ■ Alc/Marij/PCP ■ Heroin ■ Cocaine	-5.8439 -.4906 -3.0218	20.8154 1.6909 .7371	3 1 1 1	.0007** .7789 .7717 .0000**	.0029 .6123 .0487
Prior Tx for Drugs/Alc.: ■ [No] ■ Yes	-.0667	.5256	1	.8990	.9354
Treatment Status: ■ [Completed Neither] ■ Completed Both ■ Completed Inpatient	.4357 -.5301	.6479 .7363	2 1 1	.3485 .5013 .4715	1.5460 .5885
Treatment Site: ■ [Standard] ■ Enhanced	.6986	.5181	1	.1775	2.0109
Positive for Opiates: ■ [No] ■ Yes	2.4363	.5699	1	.0000**	11.4309
Constant	-4.8249	2.1269	1	.0233	

**p < .01.

[brackets]: indicate reference category.

Predictors of Employment at Follow-Up

Treatment program attended was a significant predictor of employment at follow-up. Specifically, clients who attended the standard program were more likely to be employed at follow-up than clients who attended the enhanced program (see Exhibit IV-11). Regression results indicated that significant correlates of employment at follow-up were gender, treatment program, treatment completion, and cocaine urinalysis at follow-up. Controlling for other factors, males were more likely to be employed at follow-up than females. Also, clients who tested positive for cocaine by urinalysis at follow-up were less likely to be employed. As in the recidivism and cocaine urinalysis results, if a client completed both the inpatient and outpatient treatment phases, they showed more positive outcomes than those who completed neither phase. In this case, those who completed both treatment phases were more likely to be employed than those who completed neither treatment phase.

Predictors of Treatment Completion

Treatment completion was found to be a critical correlate of positive treatment outcomes. As a result, we conducted logistic regressions to identify predictors of treatment completion. As shown in Exhibit IV-12, clients' age at admission was a significant predictor of treatment completion. With each year increase in age, the odds of completing treatment were increased. Primary drug diagnoses at intake were also significant. If a respondent was diagnosed with heroin dependence, the odds of completing treatment were increased, compared to having a diagnosis of dependence on heroin and cocaine. Respondents diagnosed with cocaine dependency or alcohol/marijuana/PCP dependencies did not significantly differ from respondents with cocaine and heroin dependencies, with regard to treatment completion. In addition, respondents who were on probation, parole, or pre-trial release at admission were more likely to complete treatment than those who had no criminal status. Variables that were not associated with treatment completion included: gender, education, total number of prior arrests, use of needles, and psychological diagnosis at admission. It is important to note that treatment program attended (enhanced or standard) was also not a significant predictor of treatment completion. This supports the previous findings that completing treatment seems to be more critical for positive outcomes than the type of treatment program attended.

**EXHIBIT IV-11
LOGISTIC REGRESSION ASSESSING EMPLOYMENT AT FOLLOW-UP (N=247)**

Variable	B	S.E.	df	Sig.	Exp (B)
Gender: ■ [Male] ■ Female	-1.3800	.3720	1	.0002**	.2516
Age	.0456	.0292	1	.1183	1.0467
Highest Grade Attended	.1585	.0854	1	.0634	1.1718
Marital Status: ■ [Never Married] ■ Divorced/Separated ■ Married/Living Tog.			2	.5182	
	-.4929	.4613	1	.2852	3.0071
	-.3078	.4598	1	.5033	1.2243
Prior Arrests	.0448	.0280	1	.1090	.9562
Criminal Status: ■ [No] ■ Yes					
	-.0021	.3702	1	.9954	.9979
Primary Drug Diagnoses: ■ [Heroin+Cocaine] ■ Alc/Marij/PCP ■ Heroin ■ Cocaine			3	.8724	
	-.1832	.9239	1	.8428	.8326
	.8654	.4246	1	.5435	2.3759
	.4858	.3680	1	.1867	1.6255
Treatment Site: ■ [Standard] ■ Enhanced					
	1.0060	.3311	1	.0024**	.3657
Prior Tx for Drugs/Alc.: ■ [No] ■ Yes					
	.1602	.3237	1	.6207	1.1738
Treatment Status: ■ [Completed Neither] ■ Completed Both ■ Completed Inpatient			2	.0134*	
	1.1010	.3972	1	.0056**	3.0071
	.2024	.4451	1	.6494	1.2243
Positive for Cocaine: ■ [No] ■ Yes					
	-1.0688	.3595	1	.0029**	.3434
Positive for Opiates: ■ [No] ■ Yes			1		
	-.2064	.5262		.6949	.8135
SCID Diagnoses: ■ [No Disorder] ■ Provisional Only ■ Other Disorders ■ Depression ■ APD ■ APD+Depression			5	.0759	
	.8020	.6360	1	.2073	2.2300
	-.1200	.5888	1	.8385	.8869
	.4980	.6382	1	.4352	1.6454
	.3007	.4516	1	.5055	1.3508
	-.0634	.5578	1	.9095	.9386
Constant	-1.8912	1.4277	1	.1853	

*p < .05.

**p < .01.

[brackets]: indicate reference category.

EXHIBIT IV-12					
LOGISTIC REGRESSION OF FACTORS RELATED TO TREATMENT COMPLETION					
(N=326)					
Variable	B	S.E.	df	Sig.	Exp (B)
Gender:					
■ [Male]					
■ Female	.3041	.2960	1	.3042	1.3554
Age	.0641	.0230	1	.0054**	1.0662
Highest Grade Attended	-.0747	.0639	1	.2427	.9281
Total Prior to Admission Arrests	-.0302	.0206	1	.1429	.9703
Criminal Status:					
■ [No]					
■ Yes	.5861	.2948	1	.0468*	1.7969
Primary Drug Diagnoses:			3	.0209*	
■ [Heroin+Cocaine]					
■ Alc/Marij/PCP	-.5155	.5982	1	.3888	.5972
■ Heroin	2.4976	1.0889	1	.0218*	12.1533
■ Cocaine	-.5932	.2996	1	.0720	.5832
Treatment Site:					
■ [Standard]					
■ Enhanced	.1590	.2431	1	.5131	1.1723
Use of Needles:					
■ [No]					
■ Yes	-.6675	.3507	1	.0570	.5130
SCID Diagnoses:			5	.0943	
■ [No Disorder]					
■ Provisional Only	-.5208	.4926	1	.2904	.5940
■ Other Disorders	-.0955	.4705	1	.8392	.9090
■ Depression	-.8336	.5010	1	.0961	.4345
■ APD	.1368	.3419	1	.6889	1.1466
■ APD+Depression	.6187	.4450	1	.1645	1.8564
Constant	-1.5131	.0579	1	.1526	

*p < .05.

**p < .01.

[brackets]: indicate reference category.

V. DISCUSSION

The DCI's primary objective was to conduct an experiment to determine if clients enrolled in the enhanced program would do better than persons enrolled in the standard program. A major difference between the two treatment programs was length of treatment. The standard program was designed for clients to spend approximately 10 months inpatient and 2 months outpatient, and the enhanced program was designed for clients to spend 6 months inpatient and 6 months outpatient. This study of residential treatment outcomes is unique because it is one of only two studies (McCusker et al., 1995) that has randomly assigned clients to TC programs of different duration. The DCI is unique in obtaining self-report and objective measures of drug use and criminal behavior.

1. STANDARD VERSUS ENHANCED CLIENT OUTCOMES

Our bivariate analyses seemed to indicate that clients who attended the longer inpatient program (standard) had better outcomes at follow-up than those who attended the shorter inpatient program (enhanced). But, the differences in rearrest and drug use did not survive the multivariate analyses controlling for other variables that may have also affected outcome, such as treatment completion, demographics, substance abuse and treatment history, psychological diagnoses, and criminal history. We repeatedly found that persons who completed treatment, regardless of type of program, had better outcomes. A major exception was that the program differences in employment status at follow-up still appeared significant in the multivariate analyses. Clients who attended the standard program were more likely to be employed at follow-up than those who attended the enhanced program. Because our random assignment was effective, we can be confident that the employment differences at follow-up are not due to client differences prior to entering treatment. A possible explanation for this finding is that clients in the standard program received more vocational services than clients in the enhanced program. Also, clients in the standard program received vocational services for a longer period of time, because the treatment program was longer. They were also more likely to be referred to jobs while they were in inpatient treatment and were likely to receive more support from staff and peers, as they continued in inpatient treatment. Treatment was designed so standard program clients would engage in a "traditional" work adjustment program (30 hours/week), as compared to clients in the enhanced program, who engaged in a "modified" work adjustment program (15 hours/week).

2. IMPORTANCE OF TREATMENT COMPLETION

Our results suggest that even more important than attending a longer inpatient program is completing treatment. This is a critical finding, particularly in this study, where more than one-third of the original sample completed treatment (33% completed the standard program, and 38% completed the enhanced program). This rate of completion exceeds those found by previous studies. McCusker (1995) reported that studies have repeatedly found that longer programs have lower completion rates, ranging from 7 percent to 15 percent. Most improved outcomes were seen in clients who completed both the inpatient and outpatient phases of treatment. These findings support results from previous studies that have found the need for an outpatient or aftercare program following the inpatient program, even if the outpatient phase lasts only 2 months (as it did in the standard treatment). The results clearly indicate that completing the inpatient portion alone, whether 6 or 10 months long, was not effective in reducing drug use and criminal activity. Clients who completed both phases of treatment in either treatment program were characterized at follow-up by substantial reductions in arrest and in cocaine/crack use, as well as by being more likely to be employed. The reduction in drug use overall, and particularly in cocaine/crack use is of great importance, as that was the drug of greatest abuse in this population.

The reduction in criminal activity is also critical, as this population had a significant history of criminal involvement. In fact, research has suggested that involvement with the criminal justice system helps keep clients in treatment. Many are afraid to break the condition of their parole or probation and return to jail. Continued involvement by the criminal justice system can therefore prove to be very helpful to a population of substance abusers who are also involved in illegal activities, particularly if the criminal justice system enforces penalties for parole or probation violations. It would be essential for the treatment staff to remain in close contact with the criminal justice staff so clients continue to realize the importance of remaining in treatment, particularly since this study has found that completing treatment can lead to substantial improvements in a substance abuser's life.

The results of this study also support the importance of following an inpatient program with an outpatient or aftercare program in which clients can transition into the community while still participating in treatment (DeLeon, Melnick, Schoket, & Jainchill, 1993; Moos, Pettie, & Gruber, 1995; Inciardi, Martin, Butzin, Hooper, & Harrison, 1997, Hiller, Knight, Devereux, & Hathcoat, 1996). Although completing inpatient treatment presents a challenge, it seems that the greatest challenge involves remaining sober and not involved in criminal activities in a less

structured and protective environment like the community. Programs should emphasize this transition period and should recognize that clients need support as they re-enter the community.

3. PREDICTORS OF OUTCOMES

Reducing recidivism of all clients who participated in this study is crucial, as the sample was characterized by high rates of criminal involvement prior to treatment. The treatment program attended was not found to predict recidivism at follow-up, but treatment completion was found to be a predictor. The same results were found when predicting positive cocaine urinalysis. These findings support the importance of completing the entire planned treatment and point to the lesser importance of the length of the inpatient program on recidivism and drug use.

Being employed in a legitimate job at follow-up is a critical measure of improved outcome for the clients in this study. Both treatment completion and treatment program attended were found to be significant predictors of employment status at follow-up. This finding again points to the importance of completing both the inpatient and outpatient portions of treatment, but also suggests that a longer inpatient program may be important in increasing this type of pro-social behavior.

For all outcomes but one (employment status at follow-up, in which standard clients did better), type of program attended was not important. We consistently found that of greater importance is treatment completion. Therefore, the emphasis of treatment programs should be on helping clients stay in treatment. This study succeeded in retaining serious drug users in treatment, many with Antisocial Personality Disorder (Messina, Wish, Nemes, 1997), therefore improving their lives at follow-up. It would be of great value to examine what aspects of treatment led clients to stay in treatment. Further examination of treatment experiences of completers versus non-completers would be invaluable.

The length of time spent in a particular phase of treatment (inpatient vs. outpatient) does not seem to be a critical factor, except for employment status. Rather, what seems to be important is completing a treatment program which is composed of both of these modalities. It is difficult to separate the importance of the additional services provided by the enhanced programs, as related to the shorter inpatient phase. This is especially difficult without having examined specific services provided at each facility. It would be helpful to examine whether the services provided at the enhanced program significantly exceeded those provided at the standard program. This would help determine if a shorter inpatient treatment program is as effective as a longer

inpatient treatment program, if the same level of services is provided. This is an important question in terms of cost-effectiveness. It is possible that those who attended the shorter inpatient treatment program would not have done as well as those who attended the longer inpatient treatment program if the services were not enhanced at the shorter one. If the additional services are not necessary, then a shorter (and less expensive) inpatient treatment could be established. If the completion of the inpatient phase alone had been found to lead to better outcomes, a recommendation for a shorter inpatient phase would be logical, but our findings do not indicate that completing the inpatient phase alone is helpful. It is difficult to determine how long the program would have to be in order for completion to lead to improved outcomes. It would be helpful in this study to conduct a long term follow-up to determine if the lack of program differences found up to 3 years after treatment persist after a number of years.

The longer inpatient treatment program seemed to improve employment outcome at follow-up more than the shorter inpatient treatment program. But again, it is difficult to determine if a specific aspect of treatment led to this outcome or if it was strictly the time spent in treatment, particularly because the treatment programs were designed so that clients in the longer inpatient program were engaged in the work adjustment program twice as many hours per week as clients in the shorter inpatient program. Improved employment outcome was influenced by both treatment program attended and treatment completion, so it is important for the longer inpatient treatment to be followed by an outpatient treatment, even if this is a short one. A long outpatient phase to aid in the transition into the community may not be necessary. It is possible that clients acquire the skills and knowledge necessary in the long inpatient phase and require a shorter outpatient period to apply what they have learned in the community.

4. PREDICTORS OF TREATMENT COMPLETION

The importance of treatment completion has been demonstrated in many of the findings described. Older clients were more likely to complete treatment, as were persons with a diagnosis of heroin dependence at admission. Also, as in previous studies, clients who were on probation, parole, or pre-trial release at admission were more likely to complete treatment than those who had no criminal status at admission. This is an important factor for the clients in this study, who were heavily involved in criminal activities and with the criminal justice system at admission. This may also be related to the high completion rates obtained in this study, when compared to previous TC studies in which retention was examined. On the other hand, type of treatment program (enhanced or standard) was not found to be a significant predictor of treatment completion.

5. FUTURE ANALYSES

We plan to conduct a number of analyses if time and resources permit. We plan to compare characteristics of those who completed both phases of treatment to help identify correlates of success in treatment. Future analyses will focus on attempting to identify treatment process factors which were important to leading to more positive outcomes. For example, we will examine if specific treatment services were responsible for the more positive outcome of some clients as opposed to specific client traits.

We also plan to examine hair and urine results and criminal justice records and compare them to self-reported information to help clarify the question of the validity of self-reports among treated substance abusers, which is an issue that affects all researchers conducting studies in this sensitive field and in other fields. We have recently received the results from the laboratory which analyzed our hair samples. The results will be examined and used as an additional measure of substance use at follow-up, as well as to compare findings to self-report and to urinalysis results. We also plan to conduct survival analyses, in which we examine specifically when clients dropped out of treatment rather than whether or not they dropped out of treatment.

We are also in the process of examining the effects of psychological diagnoses on outcomes, particularly Antisocial Personality Disorder (Messina, Wish, Nemes, 1997), and plan to examine our sample of women separately.

After analyses are conducted, it would be of great value to re-interview our participants at a later point in time. This research would allow us to determine which improvements are only temporary and which are long-term, and let us better assess the effectiveness of treatment. It may be, for example, that good treatment outcomes persist longer in clients assigned to the standard or enhanced program.

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APPENDIX A

Description of Tracking Techniques

The following statistics, presented in Table A-1, describe the success of each tracking method, but they do not describe the number of times a respondent may have scheduled an appointment prior to being interviewed, or the methods used to locate the respondent each of those times. The most effective tracking method was phoning, which usually involved making numerous calls to friends and family, phoning at various times of the day, evening and on weekends, and obtaining phone numbers from other sources. Approximately 45 percent of the respondents were ultimately tracked through a phone contact. The next most efficient and very cost-effective method was mailing letters. An estimated 32 percent of the sample was interviewed in response to a letter received. This process also often involved sending multiple letters to all parties involved, and using post office codes to make decisions about the most useful mailing plan. Twelve percent of the sample was located through street outreach. These were consistently some of the most difficult respondents to track. Usually phone and mailing attempts were futile in these cases. Eight percent of the respondents interviewed were identified within the criminal justice system, with information provided by prisons and probation/parole officers. Three percent of the respondents were located with the assistance of another respondent.

TABLE A-1 TRACKING TECHNIQUES FOR FOLLOW-UP INTERVIEW (N=380)	
Tracking Technique	Percent Contacted
Phone Contact	45
Mailing Letters	32
Street Outreach	12
Criminal Justice System ^a	8
Referred from a Respondent	3
	100%

*Includes probation, parole, and prison systems.

APPENDIX B

TABLE B-1 ARREST CODES FOR PRETRIAL DATA		
GROUP CODE	NUMBER CODE	WRITTEN CHARGE
A	1	Possession of Drugs
A	2	Possession of Paraphernalia
B	3	Sale/Manufacture of Drugs
C	4	Forgery/Uttering
C	5	Fraud
C	6	Embezzlement (bad checks)
C	7	Poss. Stolen Property
D	8	Gambling
E	9	Pimping
F	10	Prostitution
G	11	Robbery
G	12	Robbery (mugging)
G	13	Armed Robbery
H	14	Burglary
I	15	Larceny (theft)
I	16	Pick-pocket/Purse snatch
I	17	Shoplifting
I	18	Theft from vehicle
I	19	Theft of auto parts
I	20	Theft from building
J	21	Homicide
J	22	Manslaughter
J	23	Aggravated Assault
J	24	Assault with Weapon
J	25	Kidnapping
J	26	Forcible Rape

TABLE B-1 (CONTINUED)
ARREST CODES FOR PRETRIAL DATA

GROUP CODE	NUMBER CODE	WRITTEN CHARGE
K	27	Simple Assault
L	28	Unregistered Firearm
L	29	Carrying Dangerous Weapon
L	30	Poss. of Prohibited Weapon
M	31	Offense Against Family
M	32	Non-payment of Support
N	33	Vagrancy
N	34	Suspicion
N	35	Disorderly Conduct
N	36	Loitering
N	37	Public Drunkenness
O	38	Drunk Driving
P	39	Reckless Driving
P	40	Driving without License
Q	41	Parole Violation
Q	42	Probation Violation
R	43	Contempt of Court
R	44	Failure to Appear
R	45	Bail Reform Act
S	46	Arson
T	47	Auto Theft
U	48	Destruction of Property
U	49	Sodomy
U	50	Fugitive

APPENDIX C METHODOLOGICAL ANALYSES

TABLE C-1 DEMOGRAPHIC CHARACTERISTICS AT BASELINE, BY FOLLOW-UP STATUS (N=412)		
Characteristic	Follow-Up (N=380^a)	No Follow-Up (N=32^a)
Male	72%	66%
Black	99% **	84% **
Mean Age at Admission	32.0 years	34.0 years
Ever Worked Legitimate Job	90%	87%
Highest Grade Attended (Mean)	10.9 years	11.0 years
Marital Status:		
■ Never Married	70%	61%
■ Married/Living Together	16%	26%
■ Divorced/Separated/Widowed	14%	13%
	100%	100%
Children		
■ Raising Children	31%	35%
Hierarchical SCID Diagnoses:		
■ No Disorder	20%	17%
■ Provisional Only	11%	4%
■ Other Disorders	9%	13%
■ Depression	10%	18%
■ APD	38%	39%
■ APD+Depression	12%	9%
	80%	83%
	100%	100%

*N's vary slightly due to missing data.

**P<.01.

TABLE C-2
CRIMINAL HISTORY DATA (OBTAINED FROM CRIMINAL JUSTICE SYSTEM),
BY FOLLOW-UP STATUS (N=412)

Status	Follow-Up (N=389 ^a)	No Follow-Up (N=32 ^a)
Criminal Status at Admission		
■ Parole/Probation	60%	59%
■ Jail/Bail	6%	16%
■ No Criminal Status	34%	25%
	100%	100%
Mean # Arrests:		
■ Prior to Admission	7.8	9.9
■ 12 Months Prior to Admission	1.0	.9
Post-Discharge Arrests:		
■ None	52%	45%
■ 1	21%	26%
■ 2+	27%	29%
	100%	100%
Mean Total Arrests Ever	9.0	11.1

*N's vary slightly due to missing data.

**p<.01.

TABLE C-3
TREATMENT COMPLETION, BY FOLLOWED-UP STATUS (N=412)

Status	Follow-Up (N=380)	No Follow-Up (N=32)
Phases Completed:		
■ Inpatient and Outpatient	37%	16%
■ Inpatient Phase Only	20%	34%
■ Neither Inpatient/Outpatient	43%	50%
	100%	100%
Mean Time Spent in (in months):		
■ Inpatient Phase	6.5	5.8
■ Outpatient Phase ^a	<u>2.0</u>	<u>1.7</u>
Inpatient and Outpatient Phases	8.5	7.5

*p<.05.

^aIncludes 179 people who did not attend outpatient phase.

TABLE C-4
DEMOGRAPHIC CHARACTERISTICS AT BASELINE,
BY PRISON STATUS AT FOLLOW-UP (N=380)

Characteristic	Non-Prison Interview (N=307)	Prison Interview (N=73)
Male	68%	92%
Black	99%	99%
Mean Age at Baseline (s.d.)	32.6 (6.6)**	29.4 (5.7)**
Ever Worked Legitimate Job	91%	86%
Highest Grade Attended (Mean)	11.0 years**	10.3 years**
Marital Status:		
■ Never Married	68%	81%
■ Married/Living Together	16%	12%
■ Divorced/Separate/Widowed	16%	7%
	100%	100%
Children:		
■ Males Raising Children	30%	36%
■ Females Raising Children	31%	17%
Hierarchical SCID Diagnoses:		
■ No Disorder	19%	22%
■ Provisional Only	10%	18%
■ Other Disorders	11%	2%
■ Depression	10%	13%
■ APD	37%	40%
■ APD+Depression	13%	5%
	81%	78%
	100%	100%

^aAntisocial Personality Disorder

**p<.01.

TABLE C-5
SELF-REPORTED DRUG USE AT ADMISSION BY PRISON STATUS AT FOLLOW-UP
(N=375)

Drug Use	Non-Prison Interview (N=303)	Prison Interview (N=72)
Drugs Used Five or More Times in Life:		
■ Cocaine	95%	92%
■ Alcohol	89%	85%
■ Crack	84%	76%
■ Marijuana	83%	86%
■ Hallucinogens	55%	54%
■ Heroin	42%	38%
Most Serious Drug Problem:		
Other	14%	13%
Cocaine/Crack	67%	67%
Heroin or Heroin + Cocaine	20%	21%
Ever Used Needles to Inject Drugs	31%	31%

TABLE C-6
SELF-REPORTED CRIMINAL DATA AT ADMISSION,
BY PRISON STATUS AT FOLLOW-UP (N=375)

Criminal History	Non-Prison Interview (N=303)	Prison Interview (N=72)
Ever Arrested	88%**	100%**
Mean Age at First Arrest	20.6 (7.2)**	17.7 (5.1)**
Mean Number of Juvenile Arrests	2.1	3.2
Mean Number of Adult Arrests	6.7	8.1
Ever Arrested for:		
■ Drug Sales	58%	69%
■ Drug Possession	54%	67%
■ Probation/Parole Violations	30%	39%
■ Larceny	25%**	40%**
■ Burglary	20%**	33%**
■ Robbery	17%**	38%**
■ Weapons Offenses	17%	25%
Mean Number of Adult Convictions	3.0*	4.3*
Supported by Illegal Activities	51%**	72%**
Mean Time in Jail in Lifetime	2.5 years**	5.0 years**
Mean Time in Jail in Past Year	4.1 months**	8.0 months**

*p<.05.

**p<.01.

TABLE C-7
CRIMINAL RECORDS DATA AND TREATMENT STATUS,
BY PRISON STATUS AT FOLLOW-UP (N=380)

Criminal Records Data	Non-Prison Interview (N=307)	Prison Interview (N=73)
Mean # of Adult Arrests Ever	7.9**	13.3**
Mean # of Adult Arrests Prior to Tx	7.0**	11.2**
Mean # of Arrests 12 Months Prior to Tx	.9**	1.5**
Treatment Status		
Treatment Site:		
■ Standard	47%	48%
■ Enhanced	53%	52%
Completion Status		
■ Completed Treatment	44%	10%
■ Dropped Out	56% } **	90% } **
	100%	100%

**p<.01.

APPENDIX D

TABLE D-1
STANDARD TREATMENT FACILITY
DRUG USE AND CRIMINAL BEHAVIOR AT FOLLOW-UP,
BY COMPLETION STATUS

Drug Use	Completed Inpatient & Outpatient %	Completed Inpatient Only %	Completed Neither %
Used Drugs Post Tx (Self-Reports)	(N=61)	(N=14)	(N=102)
■ Alcohol	15**	50**	42**
■ Marijuana	07*	21*	21*
■ Cocaine	12**	43**	51**
■ Crack	10**	29**	48**
■ Heroin	06**	36**	10**
Positive Urine Test Results:	(60)	(13)	(68)
■ Alcohol	07	23	10
■ Marijuana	10	08	10
■ Cocaine/Crack	15**	69**	43**
■ Heroin	05	23	06
Criminal Justice Status (Self Reports)			
In Prison, on Probation/Parole or on Pre-trial Release	(61) 34**	(14) 64**	(103) 57**
Criminal Justice Status (Records)			
In Prison, on Probation/Parole or on Pre-trial Release	(60) 48	(13) 54	(103) 56
Arrested 6 Months Post Tx			
Self Report	(61)3**	(14)21**	(102)19**
Criminal Justice Records	(64)6*	(17)18*	(112)23*

* p< .05

** p<.01.

TABLE D-2
ENHANCED TREATMENT FACILITY
DRUG USE AND CRIMINAL BEHAVIOR AT FOLLOW-UP,
BY COMPLETION STATUS

Drug Use	Completed Inpatient & Outpatient %	Completed Inpatient Only %	Completed Neither %
Used Drugs Post Tx (Self-Reports)	(N=80)	(N=62)	(N=59)
■ Alcohol	20**	45**	44**
■ Marijuana	08**	23**	27**
■ Cocaine	19**	52**	61**
■ Crack	19**	48**	59**
■ Heroin	13	21	12
Positive Urine Test Results:	(71)	(46)	(42)
■ Alcohol	06	04	10
■ Marijuana	04	07	10
■ Cocaine/Crack	21**	48**	60**
■ Heroin	18	09	07
Criminal Justice Status (Self Reports)			
In Prison, on Probation/Parole or on Pre-trial Release	(80) 51	(62) 55	(59) 51
Criminal Justice Status (Records)			
In Prison, on Probation/Parole or on Pre-trial Release	(79) 53	(62) 60	(59) 51
Arrested 6 Months Post Tx			
Self Report	(80)8**	(60)38**	(59)34**
Criminal Justice Records	(82)11**	(70)34**	(66)35*

**p.<.01.

APPENDIX E

TABLE E-1		
PREDICTORS OF TREATMENT COMPLETION AND RE-ARREST		
Characteristic	% Drop-Out	% Re-Arrest
All Person(412)	64	51
Gender:		
■ Male (296)	65	57**
■ Female (116)	62	37
Age:		
■ 19-25 years (60)	73	73
■ 26-30 years (131)	65	58
■ 31-35 years (106)	65	45**
■ 36-40 years (66)	58	38
■ 41 years or more (49)	59	35
Marital Status:		
■ Never Married (282)	63	54
■ Married/Living Together (66)	71	49*
■ Divorced/Separated (58)	62	36
Education:		
■ Less than 11 years (248)	61	54
■ 12 years (91)	70	48
■ Post High-School (67)	67	43
Raising Children:		
■ Yes (128)	64	46
■ No (276)	64	53
Ever Worked Legitimate Job:		
■ Yes (364)	64	50
■ No (41)	70	63
Prior Arrests:		
■ 0-1 arrests (62)	73	18
■ 2-5 arrests (122)	62	45**
■ 6-9 arrests (106)	68	67
■ 10 or more arrests (121)	60	60

TABLE E-1 (CONTINUED)
PREDICTORS OF TREATMENT COMPLETION AND RE-ARREST

Characteristic	% Drop-Out	% Re-Arrest
Diagnosis at Intake ^a :		
■ No Disorder (66)	58	49
■ Provisional Only (36)	75	58
■ Other Axis 1 & Axis 2 Dis. (33)	61*	33*
■ Depression (37)	76	68
■ APD (127)	56	54
■ APD + Depression (39)	44	36
Primary Drug Dx at Intake ^a :		
■ Other ^b (16)	63	63
■ Heroin (11)	18**	64
■ Cocaine (168)	67	50
■ Heroin & Cocaine (142)	55	49
Prior Tx for Alcohol or Drugs:		
Yes (199)	64	43**
No (205)	65	59
Use of Needles:		
Yes (126)	62*	46
No (278)	65	53
Status at Intake:		
■ Criminal Justice (274)	60**	56**
■ No Criminal Justice Status (136)	73	40
Treatment Site:		
■ Standard (193)	67	45*
■ Enhanced (218)	62	56
Completed Treatment:		
■ Completed Inpatient & Outpatient	--	31
■ Completed Inpatient Only	--	66**
■ Completed Neither	--	61
Urine Test for Cocaine at Follow-Up:		
■ Positive (109)	--	59**
■ Negative (191)	--	34
Urine Test for Heroin at Follow-Up:		
■ Positive (30)	--	40
■ Negative (270)	--	43
Time Between Tx Admission & C.J. Coding:		
■ ≤2.5 years	--	49
■ 2.51 ≥3.00 years	--	50
■ 3.01 ≥3.50 years	--	50
■ 3.51 ≥4.00 years	--	60

*p<.05.

**p<.01.

^aSCID diagnoses and drug categories are hierarchical.

^bIncludes alcohol, marijuana, hallucinogens, and other drugs.

**TABLE E-2
PREDICTORS OF POSITIVE URINALYSIS (N=301)**

Characteristic	% Positive	
	Cocaine	Opiates
All Persons (301)	36	10
Gender:		
■ Male (203)	37	8
■ Female (98)	35	13
Age:		
■ 19-25 years (32)	38	9
■ 26-30 years (101)	42	6
■ 31-35 years (81)	38	9
■ 36-40 years (49)	33	16
■ 41<years (38)	21	16
Marital Status:		
■ Never Married (200)	38	12
■ Married/Living Together (48)	31	4
■ Divorced/Separated (49)	37	10
Education:		
■ >11 years (175)	34	10
■ 12 years (67)	40	12
■ Post High-School (55)	40	9
Raising Children:		
Yes (269)	39	14
No (27)	35	8
Ever Worked Legitimate Job:		
Yes (269)	37	10
No (27)	33	7
Diagnosis at Intake ^a :		
■ No Disorder (48)	40	8
■ Provisional Only (25)	36	0
■ Other Disorders (29)	31	10
■ Depression (25)	40	20
■ APD (94)	31	13
■ APD and Depression (33)	30	9
Primary Drug Dx at Intake ^a :		
■ Other ^b (8)	0	0
■ Heroin (6)	17**	17**
■ Cocaine (129)	43	2
■ Heroin & Cocaine (111)	27	21

TABLE E-2 (CONTINUED)
PREDICTORS OF POSITIVE URINALYSIS (N=301)

Characteristic	% Positive	
	Cocaine	Opiates
Prior Tx for Alcohol or Drugs:		
Yes (154)	37	12
No (141)	36	8
Use of Needles:		
Yes (89)	25**	19**
No (206)	41	6
Status at Intake:		
■ Criminal Justice (177)	32*	13
■ No C.J. Status (123)	43	7
Treatment Site:		
■ Standard	33	7
■ Enhanced (159)	39	13
Completed Treatment:		
■ Completed Inpatient & Outpatient	18 53**	12 12
■ Completed Inpatient Only	49	6
■ Completed Neither		
Urine Test for Cocaine at Follow-Up:		
■ Negative	--	6**
■ Positive	--	17
Urine Test for Opiates at Follow-Up:		
■ Negative		
■ Positive	33** 63	-- --

*p<.05.

**p<.01.

^aHierarchical psychological diagnoses and drug categories.

^bIncludes alcohol, marijuana, hallucinogens, and other drugs.

The perspective offered in this document is solely that of the author(s) and does not reflect the policies or views of the Federal government, or any of its Departments or Agencies.