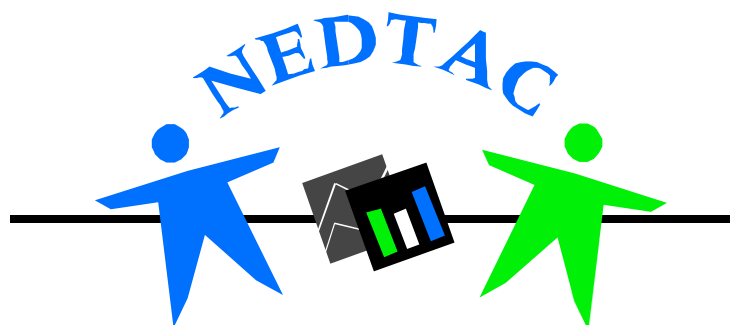


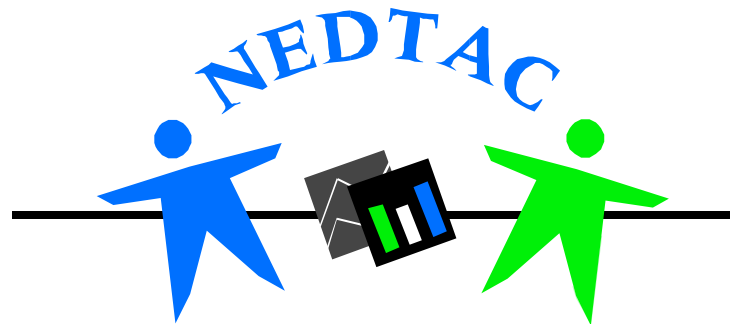
**NATIONAL EVALUATION DATA AND
TECHNICAL ASSISTANCE CENTER**



**OPENING THE BLACK BOX:
THE IMPACT OF IN-PATIENT TREATMENT SERVICES
ON CLIENT OUTCOMES**

July 1999

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ON CLIENT OUTCOMES**

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CSAT
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SAMHSA

TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	i
ACKNOWLEDGMENTS	ii
ABSTRACT	iii
I. INTRODUCTION	1
1. THE DISTRICT OF COLUMBIA TREATMENT INITIATIVE (DCI)	1
2. RESEARCH QUESTION	1
II. METHODS	3
III. RESULTS	5
1. BIVARIATE ANALYSES	5
1.1 Treatment Completion	5
1.2 Negative Urine for Cocaine at Follow-up	5
1.3 Employment at Follow-up	5
1.4 Post-Discharge Arrest	5
2. SUMMARY OF BIVARIATE FINDINGS	7
3. MULTIVARIATE ANALYSES	7
3.1 Treatment Completion	8
3.2 Post-Discharge Arrest	8
3.3 Employment and Cocaine Use at Follow-up	11
IV. DISCUSSION	12
REFERENCES	14

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 in-patient and out-patient treatments of different durations to clients seeking treatment in Washington, D.C. The organizations involved in the cooperative agreement included CSAT; D.C. 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 in-patient treatment followed by 6 months of out-patient care) and those receiving the standard program (10 months of in-patient treatment followed by 2 months of out-patient care). The study obtained a very high follow-up rate (93%), which is essential to the accurate measurement of treatment outcomes.

Few studies have examined specific services provided in therapeutic communities (TCs) and their effect on outcomes. DCI provides a unique opportunity to examine this topic because extensive treatment service data were collected and because of the high follow-up rate obtained. This report presents results of an analysis conducted to answer the following research question: Are services received related to treatment completion, employment, re-arrest, or drug use at follow-up?

Sharon Bishop
Project Director
National Evaluation Data and
Technical Assistance Center (NEDTAC)

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The District of Columbia Treatment Initiative (DCI) was a cooperative agreement among the D.C. Alcohol and Drug Abuse Services Administration (ADASA), the National Institute on Drug Abuse (NIDA), through a contract from Caliber Associates, 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.

We are grateful to the staff and clients at Second Genesis for their participation. We also appreciate the assistance of Jerome Jaffee, Barry Brown, Herman Diesenhaus, Gary Palsgrove, Jeffrey Hoffman, John Carver, Samuel Carson, Robert Gesumaria, and the Addiction Prevention and Recovery Administration (APRA). Finally, special thanks to the interviewers who conducted the follow-up interviews and worked day and night to locate the clients. Without the cooperation of all these parties, this study would not have been possible.

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ABSTRACT

Few studies have examined the effects of specific services provided in therapeutic communities (TCs) on outcomes. The District of Columbia Treatment Initiative (DCI) provides a unique opportunity to examine this topic because extensive treatment service data were collected and because of the high follow-up rate obtained (93%). Findings are compared to prior analyses of treatment outcome from the DCI, that did not utilize the treatment service information. Experimental, clients were randomly assigned to two TC programs. A subsample of clients from the DCI who remained in in-patient treatment for at least 60 days were included in the analyses (N=371). The following research question was addressed: Are services received related to treatment completion, employment, re-arrest, and drug use at follow-up? After controlling for program and client characteristics, specific services received were related to client outcomes. Level of vocational education services received was associated with increased odds of completing treatment and participation in group services was associated with decreased odds of a post-discharge arrest. The intensity of all in-patient services received was also related to these two outcomes. Clients who received a greater number of all in-patient services were more likely to complete treatment and were less likely to be arrested after discharge. Individual treatment services and total treatment services were not related to employment or cocaine use at follow-up. Our findings suggest that treatment programs may want to offer more vocational education and group treatment services. These services may help increase pro-social behavior following discharge.

I. INTRODUCTION

Few studies have examined specific services provided in therapeutic communities (TCs) and their effect on outcomes. In fact, many social scientists who have tried to summarize the treatment literature have been frustrated by the lack of specific program descriptions (Gaes, 1998). Most of the research literature on TCs provides a general description of the services provided; yet, little is known about how services received contribute to client outcomes.

1. THE DISTRICT OF COLUMBIA TREATMENT INITIATIVE (DCI)

The DCI was a randomized experiment designed to test the efficacy of providing TC treatment and subsequent out-patient treatment of different lengths to clients seeking treatment in Washington, D.C. A total of 412 clients were randomly assigned to two TCs and subsequent out-patient treatment administered by the Second Genesis Treatment Group. The Standard In-patient Program was designed to reflect TC treatment that is customarily available in the United States, consisting of approximately 10 months of in-patient care followed by two months of out-patient care. The Abbreviated In-patient Program provided six months of in-patient care, six months of out-patient care and a wide range of extra services. The DCI study provides a unique opportunity to examine services and their effects on outcomes because extensive treatment service data were collected and many clients were successfully followed up an average of 19 months after discharge (93%). A more detailed description of the DCI can be found in the DCI final report (Nemes, Wish, & Messina, 1998).

The initial DCI findings did not examine how treatment services were related to client outcomes, including treatment completion, post-treatment employment, post-treatment arrest, and cocaine and opiate urinalyses (Nemes et al., 1998). Except for employment status at follow-up, in which Standard Program clients did better, type of program attended was not associated with client outcomes. 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. This paper extends these prior analyses to determine if services received were associated with client outcomes.

2. RESEARCH QUESTION

This paper addresses the following research question: Are services received related to treatment completion, employment, re-arrest, and drug use at follow-up? Once the relationship of the services to the outcome variables were examined, the treatment variables were added

to the original statistical models of client outcome, presented in the DCI final report (Nemes et al., 1998).

II. METHODS

The data analyzed in this paper comes from the Summary of Daily Services Record form which was in use at the two treatment programs. The Summary of Daily Services Record was collected by Second Genesis staff on a form that was scanned into the treatment services database. The form was designed so the number of individual services received in one day could be recorded for each client. Depending on the service and on the frequency with which it was offered, up to five units of the same service could be recorded in one day. For example, although the Summary of Daily Services Record form only allows for one “urinalysis” per day, it allows for up to five “information groups” per day. The form allowed for data collection on a number of treatment services, which were grouped into the following categories in the database: individual treatment, group treatment, single family treatment, multi-family treatment, medical contact, medicine administration, urinalysis, recreational activities, vocational education, job placement, self-help group, treatment assessment, HIV education/counseling, outside medical referral, outside dental referral, outside mental health referral, outside vocational referral, outside other referral, research assessment, verbal reprimand, child care and creative arts. Data was collected on services received both during the in-patient phase and during the out-patient phase.

Services included in these analyses are: individual treatment, group treatment, medical contact, medicine administration, recreational activities, vocational education, self-help group, HIV education/counseling, and outside medical referral. In addition, a variable summing the total of the 9 in-patient services served as a measure of intensity of services.

In order to control for different amounts of service received as a result of spending a greater amount of time in treatment, services in the in-patient part of treatment were counted only for the first 60 days of treatment. Hence, only clients who remained in in-patient treatment for at least 60 days were included in the analyses (N=371). Forty-one clients who did not stay in in-patient treatment for at least 60 days were excluded. As we draw conclusions from our findings it is important to remember that these findings may therefore not apply to the 10 percent of clients who dropped out of treatment prior to the first 60 days.

To determine if the level of services received was related to client outcomes, in the bivariate analyses the sample was divided into high or low levels of service units received for each in-patient service. Clients who received more than the median number of units were classified as receiving high levels of service, and those who received equal to or below the median number of units were classified as receiving low-levels of service. Some clients may not have participated in a particular service and therefore, were included in a “none” category. In addition, the total number of the nine services received was broken down into quartiles (see

Exhibit III-1). Multivariate analyses, however, include the actual number of individual treatment services and the total services received as continuous variables.

III. RESULTS

This section contains the results of the analysis conducted to answer the question: Are in-patient services received related to treatment completion, employment, re-arrest, and drug use at follow-up?

1. BIVARIATE ANALYSES

Exhibit III-1 presents the bivariate analyses of in-patient services in the first 60 days of treatment and the outcome variables. The following sections presents a summary of the results by outcome variables.

1.1 Treatment Completion

The only in-patient service that was related to treatment completion was vocational education. Those who received high levels of vocational education (49 units or above) were more likely to complete treatment than those who received low levels (equal to or below 48 units) of this service (45% versus 35%, $p < .05$).

1.2 Negative Urine for Cocaine at Follow-up

Clients who tested negative for cocaine at follow-up had received some outside medical referrals during in-patient treatment. Compared to those who were not referred for outside medical help, those who received either low levels (equal to or below 1 unit) or high levels (2 units or above) of this service were more likely to have negative urinalyses results (57% versus 74% versus 71%, $p < .05$).

1.3 Employment at Follow-up

Clients who received higher levels (150 units or above) of in-patient group treatment (70% versus 59%, $p < .05$) and in-patient vocational education (71% versus 59%, $p < .05$) were more likely to be employed at follow-up.

1.4 Post-Discharge Arrest

Clients who received higher levels of in-patient group treatment (57% versus 47%, $p < .05$), in-patient vocational education (61% versus 44%, $p < .01$), self-help group (58% versus

EXHIBIT III-1
ASSOCIATION OF LEVEL OF IN-PATIENT TREATMENT SERVICES
RECEIVED TO POST-TREATMENT OUTCOMES (N=371)^a

OUTCOMES

TREATMENT SERVICES	COMPLETED TREATMENT % (N)	NEGATIVE URINE FOR COCAINE % (N)	EMPLOYED % (N)	NO ARREST C.J. RECORDS % (N)	MEDIAN
Individual Treatment					3
None	39 (44)	57 (30)	55 (31)	48 (44)	
Low-Level	40 (166)	70 (131)	65 (133)	51 (166)	
High-Level	39 (61)	64 (118)	65 (121)	54 (161)	
Group Treatment					149
Low-Level	38 (186)	65 (142)	59* (144)	47* (186)	
High-Level	41 (185)	66 (137)	70 (141)	57 (185)	
Medical Contact					2
None	37 (37)	67 (75)	63 (79)	49 (100)	
Low-Level	44 (142)	66 (103)	63 (104)	50 (142)	
High-Level	36 (129)	64 (101)	68 (102)	57 (129)	
Medicine Administration					1
None	38 (161)	63 (112)	62 (114)	52 (161)	
Low-Level	45 (42)	79 (34)	74 (35)	50 (42)	
High-Level	40 (168)	65 (133)	63 (136)	52 (168)	
Recreational Activity					34
None	54 (13)	70 (10)	60 (10)	46 (13)	
Low-Level	39 (179)	60 (133)	61 (138)	48 (179)	
High-Level	39 (179)	71 (136)	68 (137)	56 (179)	
Vocational Education					48
Low-Level	35* (199)	62 (148)	59* (152)	44** (199)	
High-Level	45 (172)	66 (131)	71 (133)	61 (172)	
Self-help-Group					69
Low-Level	36 (196)	66 (145)	62* (149)	47* (196)	
High-Level	44 (175)	66 (134)	67 (136)	58 (175)	
HIV Education					1
None	37 (120)	64 (84)	71 (96)	52 (120)	
Low-Level	32 (78)	72 (53)	70 (53)	55 (78)	
High-Level	45 (173)	64 (132)	57 (136)	51 (173)	
Outside Medical Referral					1
None	40 (164)	57 (118)	60 (123)	48 (164)	
Low-Level	36 (70)	74* (58)	66 (58)	54 (70)	
High-Level	42 (137)	71 (103)	68 (104)	56 (137)	
In-patient Service Units					336
≤259	34 (92)	61 (67)	54 (67)	45 (92)	
260-336	36 (93)	63 (68)	62 (71)	41** (93)	
337-396	50 (95)	69 (70)	72 (72)	60 (95)	
≥397	38 (89)	69 (72)	69 (73)	63 (89)	

Note: ^a Represents only those clients receiving in-patient services for first 60 days.

* p < .05

** p > .01

47%, $p < .05$), and more total in-patient service units (63% versus 60% versus 41% versus 45%, $p < .01$) were more likely to have not been arrested post-treatment.

2. SUMMARY OF BIVARIATE FINDINGS

We found that several services were related to more than one outcome measure. Clients who received more vocational education seemed to do better in terms of treatment completion, follow-up employment, and being arrest-free post-discharge. People who received more group treatment were also more likely to be employed at follow-up and to remain arrest-free after treatment. Clients who attended more self-help groups were also more likely to remain arrest-free following treatment. Clients who were referred for outside medical help were less likely to be using cocaine at follow-up.

A variable was created which added all of the 9 in-patient services that were examined in these analyses. This variable served as a measure of intensity of services received and ranged from 49 to 592 total service units. This intensity variable was related to one outcome variable: re-arrest. That is, clients who received 337 or more total service units were less likely to be arrested after treatment.

These bivariate relationships do not control for associated client characteristics. We used multivariate analysis to control for client variables that we used in our prior study of treatment outcome in these clients (Nemes, Wish, & Messina, 1999). These variables include: gender, age, education, treatment history, prior arrests, criminal justice supervision, primary drug diagnosis, needle use, Structured Clinical Inventory for DSM-III-R (SCID), and treatment site. The service variables that were related to at least one outcome in the bivariate analyses were included to determine if they changed the results from the previous models. The service intensity variable that was created by summing the individual treatment variables (i.e., adding all the units for each service) was also examined in separate multivariate analyses.

3. MULTIVARIATE ANALYSES

Three regression models were created for each of the four outcome variables. Model A is the original model presented in the DCI final report, which did not include treatment services (Nemes et al., 1998). Model B adds to Model A the service variables that were significant in the bivariate analyses (group treatment, vocational education, self-help group, and outside medical referral). Treatment service variables in Model B are no longer categorical and are included as continuous variables. Model C adds to Model A only the total intensity variable that was created

from the nine individual treatment services (also included as a continuous variable). Results are presented in Exhibit III-2 and III-3 for each outcome variable and are discussed below.

3.1 Treatment Completion

The regression models assessing treatment completion are presented in Exhibit III-2. In Model B, number of vocational education services was the only individual service variable related to treatment completion ($p < .05$). One minor change occurred in Model B compared to Model A. As in the first model, Model B indicated that older clients ($p < .01$) and clients with a primary drug addiction of heroin ($p = .01$) were more likely to complete treatment. However, criminal justice supervision was no longer related to treatment completion, as it was in Model A.

In Model C, we added the total treatment services variable and found that each additional unit of total services received increased the odds of completing treatment ($p < .05$). Model C revealed two findings that were not present in Model A. First, Model C indicated that clients who attended the Abbreviated In-patient Program were more likely to complete treatment than those who attended the Standard In-patient Program ($p < .05$). Second, clients who used needles were less likely to complete treatment ($p = .05$).

3.2 Post-Discharge Arrest

The regression models assessing post-discharge arrest are presented in Exhibit III-3. Model B indicates that group services was the only individual service variable related to post-discharge arrest ($p < .05$). A number of minor changes occurred in this post-discharge arrest model compared to Model A. Age, prior arrests, and criminal justice supervision remained related to having a post-discharge arrest in Model B, and in the same direction as the original model. In addition, Model B indicated that females and clients who completed treatment were less likely to have a post-discharge arrest ($p < .05$).

Model C indicated that clients who had received more of all the services were less likely to have a post-discharge arrest ($p < .01$). Changes from Model A that occurred in Model C are identical to those that occurred in Model B.

EXHIBIT III-2
COEFFICIENTS OF REGRESSION MODELS ASSESSING
TREATMENT COMPLETION

VARIABLES	MODEL A ORIGINAL MODEL (N=329) BETA	MODEL B SERVICE VARIABLES (N=317) BETA	MODEL C TOTAL SERVICE UNITS (N=315) BETA
Gender/[Male] Female	.3041	.3017	.3129
Age	.0641**	.0622**	.0609**
Highest Grade Attended	-.0747	-.0683	-.0885
Total Prior Arrests	-.0302	-.0319	-.0304
C.J. Supervision at Admission	.5861	.4870	.5111
Primary Drug Diagnosis/[Alc/Marij/PCP] Heroin	1.0131**	3.0095*	2.9493*
Cocaine	-.0236	-.2028	-.0910
Heroin + Cocaine	.5155	.2841	.4113
Treatment Site/[Standard] Enhanced	.1590	.5291	.7049*
Used Needles	-.6675	-.6404	-.6976*
SCID Diagnosis/[No Disorder] Provisional Only	-.5208	-.4238	-.4494
Other Disorders	-.0955	-.0162	-.1275
Depression	-.8336	-.5962	-.9388
APD	.1368	.1892	.1243
APD + Depression	.6187	.7491	.5648
Service Variables In-patient Group Treatment	---	.0023	---
In-patient Vocational/Educ.	---	.0168*	---
In-patient Self-Help Group	---	-.0033	---
In-patient HIV Education	---	-.0296	---
In-patient Medical Referral	---	-.0007	---
Total In-patient Services Units			.0040*

Note: * p < .05

** p < .01

[Brackets]: indicate reference category

EXHIBIT III-3
COEFFICIENTS OF REGRESSION MODELS ASSESSING
POST-DISCHARGE ARREST

VARIABLES	MODEL A ORIGINAL MODEL (N=327) BETA	MODEL B SERVICE VARIABLES (N=317) BETA	MODEL C TOTAL SERVICE UNITS (N=315) BETA
Gender/[Male] Female	-.5960	-.7718*	-.7129*
Age	-.1160**	-.1197**	-.1020**
Highest Grade Attended	-.0168	-.0012	.0422
Marital Status/[Never Married] Divorced/Separated Married/Living Together	-.0729 -.0454	-.5441 -.3259	-.6167 -.3868
Total Prior Arrests	-.0517*	-.0502*	-.0507*
C.J. Supervision at Admission	.7129*	.8513*	.9623**
Primary Drug Diagnosis/[Alc/Marij/PCP] Heroin Cocaine Heroin + Cocaine	.4618 -.0067 .2325	.2724 .0213 .1433	.3341 -.0541 .0486
Received Previous Treatment	.3860	.2913	.4208
Treatment Site/[Standard] Enhanced	.5228	-.1639	-1.2077**
Treatment Status/[Did Not Complete] Completed Treatment	-1.2887	-1.2378**	-1.2077**
SCID Diagnosis/[No Disorder] Provisional Only Other Disorders Depression APD APD + Depression	-.0059 -.5458 .9038 -.4292 -.4926	-.0837 -.5039 .8594 -.3569 -.9437	-.1320 -.3404 1.1997 -.3325 -.8945
Service Variables In-patient Group Treatment In-patient Vocational/Educ. In-patient Self-Help Group In-patient HIV Education In-patient Medical Referral	--- --- --- --- ---	-.0070* -.0165 -.0055 -.0717 .0728	--- --- --- --- ---
Total In-patient Services Units			-.0069**

Note: * p < .05

** p < .01

[Brackets]: indicate reference category

3.3 Employment and Cocaine Use at Follow-up

Individual treatment services and the total service units received were not related to employment at follow-up or cocaine use at follow-up. The regression models for these outcomes are not presented.

IV. DISCUSSION

This study afforded us the opportunity to examine whether specific in-patient services that clients received affected client outcomes. Bivariate analyses indicated that some services were related to several outcomes. Clients who received more vocational education seemed to do better in terms of treatment completion, employment, and post-discharge arrest. People who received more group treatment were more likely to be employed at follow-up and to remain arrest-free after treatment. Clients who attended more self-help groups were also more likely to remain arrest-free following treatment. Further, clients who were referred for outside medical help were less likely to be using cocaine at follow-up.

After we controlled for other program and client characteristics through multivariate analyses, we found only a few types of services remained significantly related to client outcomes. Greater vocational education services was related to treatment completion and greater in-patient group services was associated with a lower likelihood of a post-discharge arrest. The overall intensity of the 9 services was related to 2 treatment outcomes. Clients who received a greater number of all in-patient services in the first 60 days were more likely to complete treatment and were less likely to be arrested after discharge.

Our findings suggest that treatment programs may want to offer more vocational education and group treatment services. These services may help increase prosocial behavior following discharge. Decreasing criminal involvement is important as it has numerous implications for costs incurred by the community. Completing treatment is also crucial, as it was found to be related to a number of other positive outcomes in the original DCI report (Nemes et al., 1998; Nemes et al., 1999). Treatment completion was also associated with successful outcomes for clients diagnosed with antisocial personality disorder, who are often considered among the most difficult to treat (Messina, Wish, & Nemes, 1999).

Our findings suggest that specific treatment services and intensity of services received during the first 60 days of in-patient treatment are related to important outcomes at follow-up; however, it is difficult to identify the mechanism behind these findings. Is it the nature of the services received or the intensity of the services that is most important? It could be that the motivation of the clients receiving the services is the critical factor. Those clients who participated in the most services could be the most motivated to do well in treatment and to have better outcomes, regardless of the specific services received. To answer this question requires an experiment in which clients are randomly assigned to receive different amounts of services.

The findings from this study should be replicated. There is limited research information available that addresses the relationship of client outcomes to treatment received. Nevertheless, our initial excursion into the “black box” leads us to suggest that there is a relationship between the services TC clients receive in treatment and how they function post-discharge.

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