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# Research **51**

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RESEARCH ANALYSIS  
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**Drug Abuse  
Treatment Evaluation:  
Strategies, Progress,  
and Prospects**

U. S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service • Alcohol, Drug Abuse, and Mental Health Administration



# Drug Abuse Treatment Evaluation: Strategies, Progress, and Prospects

Editors:

Frank M. Tims, Ph.D.

Jacqueline P. Ludford, M.S.

National Institute on Drug Abuse

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# Drug Abuse Treatment Evaluation: Strategies, Progress, and Prospects

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This monograph is based upon papers and discussion from the RAUS Review Conference on Drug Abuse Treatment Evaluation, held May 25 and 26, 1983, in Rockville, Maryland. The conference was sponsored by the Office of Science and the Division of Clinical Research, National Institute on Drug Abuse.

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# Preface

The Research Analysis and Utilization System (RAUS) is designed to serve four functions:

- o Collect and systematically classify the findings of all intramural and extramural research supported by the National Institute on Drug Abuse (NIDA);
- o Evaluate the findings in selected areas of particular interest and formulate a state-of-the-art review by a panel of scientific peers;
- o Disseminate findings to researchers in the field and to administrators, planners, instructors, and other interested persons;
- o Provide a feedback mechanism to NIDA staff and planners so that the administration and monitoring of the NIDA research program reflect the very latest knowledge gleaned from research in the field.

Since there is a limit to the number of research findings that can be intensively reviewed annually, four subject areas are chosen each year to undergo a thorough examination. Distinguished scientists in the selected field are provided with copies of reports from NIDA-funded research and invited to add any information derived from the literature and from their own research in order to formulate a comprehensive view of the field. Each reviewer is charged with writing a state-of-the-art paper in his or her particular subject area. These papers, together with a summary of the discussions and recommendations which take place at the review meeting, make up a RAUS Review Report in the NIDA Research Monograph series.

"Drug Abuse Treatment Evaluation: Strategies, Progress, and Prospects" was chosen as a subject for one of these comprehensive RAUS reviews in FY 1983 because a body of knowledge had evolved, including several large treatment evaluation systems. Reports are included on the DARP program of the seventies and on the more recent TOPS system, both designed for treatment evaluation.

The results of these reviews and discussions are presented in this monograph. Dr. Frank M. Tims served as a chairman of the meeting and editor of the resulting monograph. Dr. Jerome H. Jaffe served as the other chairman. Dr. Jaffe has subsequently accepted the position of Director of the NIDA Addiction Research Center in Baltimore. Ms. Jacqueline P. Ludford, coeditor of the monograph, is coordinator of NIDA's RAUS system.

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# Executive Summary

Jacqueline P. Ludford, M.S.

A considerable body of evaluative research on the treatment of drug abuse has been generated in recent years, by clinical experience and project research and from large evaluative studies such as the Drug Abuse Reporting Program (DARP) of the 1970s and the more recent Treatment Outcome Prospective Study (TOPS). Clearly, the field was ready for a state-of-the-art review of the results of these efforts and of what we have learned about the effectiveness of different treatment modalities, methods, and techniques.

The RAUS review addressed not only the obvious questions regarding treatment components and effectiveness but also such questions as:

- o To what extent should we invest in large-scale studies of process and effectiveness vs. smaller, program-based research?
- o What are the needs from the viewpoint of the providers? From the viewpoint of the researchers?

To address these questions and the current state of the art, a RAUS meeting was convened on May 25-26, 1983. The presentations included:

- o Evaluation of Drug Abuse Treatment: A Comment on the State of the Art  
Dr. Jerome Jaffe  
V.A. Medical Center  
Newington, Conn.
- o National Treatment System Evaluation: Drug Abuse Reporting Program (DARP)  
Dr. D. Dwayne Simpson  
Texas A & M University
- o National Treatment System Evaluation: Treatment Outcome Prospective Study (TOPS)  
Mr. J. Valley Rachal  
Dr. Robert Hubbard  
Research Triangle Inst.  
North Carolina

- o Program-Based Evaluation Studies Dr. George De Leon  
Phoenix House  
New York City
- o Clinical Trials in Drug Treatment Dr. Sharon Hall  
University of California  
San Francisco
- o Outcome of Narcotics Addict Treatment in California Dr. M. Douglas Anglin  
University of California  
Los Angeles
- o Evaluation of Psychotherapeutic Approaches to Drug Treatment Dr. Charles O'Brien  
VA Hospital  
Philadelphia
- o Clinical Implications of Treatment Outcome Studies Dr. Edward Senay  
University of Chicago
- o Treatment Evaluation: The State Perspective Dr. Douglas Lipton  
New York State Division  
of Substance Abuse  
Services

Dr. Jerome Jaffe, of the Veterans Administration Medical Center, Newington, Connecticut, and Dr. Frank Tims, of the Division of Clinical Research, NIDA, served as cochairmen for the meeting and led the discussions.

Dr. Simpson discussed the results of the Drug Abuse Reporting Program (DARP), established in 1969 to collect data on community-based treatment services. Eventually it collected standardized data on 44,000 clients in 52 treatment agencies. Because of a lack of accepted criteria regarding treatment definition, classification, and outcome, the first task under DARP was to define and document terminology and standards to be commonly accepted. DARP then measured treatment outcome on the basis of amount and kind of drug use, productive activity, alcohol use, and criminality. Data on male opioid addicts, the best represented subsample, indicate most favorable outcomes were associated with methadone maintenance, therapeutic communities, and outpatient drug-free treatment; the outcome differences between the three types of treatment were not significant. There were differences in the types of clients served and in the dropout ratio, however. Dr. Simpson called for research in smaller, multi-program studies to examine the effects of differing treatments on different clients and to study process and procedures within programs, including staff-client interaction.

Mr. Rachal and Dr. Hubbard presented data from the Treatment Outcome Prospective Study (TOPS) which collected data on approximately 12,000 clients admitted to treatment between 1979-1981. Because the study is so recent, followup data are necessarily limited. TOPS was designed to analyze the association between client behavior, client characteristics, environment, and the treatment process. Its measures include data on drug use, alcohol consumption, mental



health, criminal behavior, and economic productivity. One of its research objectives is to provide testable hypotheses regarding why and for whom certain types of treatment do or do not work.

The TOPS study design, its advantages and limitations, were discussed. Pretreatment and in-treatment data indicate:

- o Outpatient drug-free programs had the biggest problem with retention: 21 percent dropout within a week or less and 36 percent within 4 weeks or less. Methadone clients are least likely to leave treatment early.
- o There is a high level of depression among clients seeking treatment; almost half of all methadone clients reported having been seriously depressed in the year before intake.
- o More than 40 percent of all clients reported some predatory illegal activity (assault, robbery, burglary, etc.) in the year before treatment; more than 70 percent of these clients reported cessation of predatory illegal activity during treatment.
- o Half of the methadone clients were unemployed when they entered treatment and most remained unemployed during treatment.

Outcomes are confounded by many factors other than treatment itself, as described in the TOPS study (see Hubbard, this volume). Followup of any drug treatment program is complicated by readmittance to the same or other treatments and by incarceration which limits opportunity to use drugs, find jobs, or commit crime. Many of the methadone clients are still in treatment at followup. Preliminary measures of outcome, however, indicate:

- o Clients improve in treatment, regardless of type, and some of this improvement lasts after treatment. More than one-third of clients report not using pretreatment primary drug during followup period.
- o Between 20 and 30 percent of clients report predatory illegal acts in the year after treatment, a significant reduction from pretreatment levels.
- o After treatment about two-thirds of all clients report no signs of depression.
- o The effect of treatment on employment trends is unclear; data are still being analyzed.

Dr. De Leon, who is Director of Research for Phoenix House, in New York, discussed program evaluation in a therapeutic community (TC). The goal of a therapeutic community is to change lifestyle to reflect abstinence from drugs, to eliminate antisocial activity, and to develop prosocial attitudes and values. In general, when TCs are evaluated, it is found that:

- o Clients improve significantly over pretreatment status as measured by drug use, criminality, and prosocial behavior.
- o Success depends on time in treatment, with improvements for those who spend several months in program but drop out, and even more striking improvements for those who complete the program.
- o Improvements in psychological adjustment correlate with improvements in social adjustment and success in the program.
- o Individuals who improve psychologically within the first several months after admission show a greater likelihood of being retained in treatment. More research is needed on the subject of retention and its correlates.

Dr. Hall presented an evaluation of clinical trials in drug abuse treatment. She described the strategies and procedures of various types of clinical trials, their advantages and disadvantages. In particular, she noted that:

- o Drug treatment clients will not accept random assignments to a treatment modality.
- o If treatment entry differs between conditions, there tend to be confounding variables which compromise interpretation of outcome data.
- o Different modalities attract different types of clients, and this fact further complicates comparisons.

Her review concluded that:

- o Well-controlled, small trials with sample size based on power analysis yield the clearest outcomes. The best of these have a treatment manual and well-developed followup procedures.
- o Research strategies should involve some degree of replication.
- o More standardization is needed in psychosocial areas, e.g., standardizing drug use index.
- o More studies or replication of findings are needed in psychotherapy, contingency management, skill training, and family therapy. Since the proportion of women clients entering treatment is increasing, some emphasis needs to be placed on treatment services geared to their needs.

Dr. Anglin reported on followup of 1,700 addicts in a study of civil commitment vs. methadone treatment in California. He pointed out that successful treatment in substance abuse ameliorates or relieves the disease but rarely "cures" it in the sense of a medical model.

Anglin and McGlothlin measured success in terms of narcotic and other drug use, crime, employment, and family stability.

The results of the evaluation indicate that both civil commitment and methadone maintenance effectively reduce drug use and crime, and, to a lesser extent, increase employment and family responsibility. Differing policies with respect to dose of methadone and time in treatment produced differing effects. Anglin considers both types of treatment to involve behavior modification techniques and offered some possible explanations for differences in results.

Dr. O'Brien focused on psychotherapeutic approaches in the treatment of drug abuse, reviewing eight controlled studies of psychotherapy with opiate addicts. In six of the eight studies, the clients improved under the psychotherapy condition as compared to controls. Important factors influencing outcome include:

- o Diagnosis at entry and improved sophistication in making an accurate diagnosis;
- o Taping of therapy sessions and treatment manuals to ensure adherence to prescribed techniques; rating instruments to measure patient-therapist interaction;
- o The number of sociopaths in the study, since psychotherapy appears to be particularly unsuccessful with sociopaths; evidence suggests, however, that psychotherapy may be helpful with addicts when given under certain conditions, specifically with those addicts on methadone and diagnosed as having depression.

Dr. Senay presented a paper on the clinical implications of drug abuse treatment evaluation research. The most important clinical implication is that treatment for drug abuse works--clients function more normally, reduce drug use and crime, and generally improve. But Dr. Senay listed a number of problems and recommendations which he feels must be addressed:

- o How can drug abuse treatment be coordinated with standard mental and health care systems? In the present system substance abusers tend to get second-class health care. We need more "structural" research in this area of integrating systems rather than operating separate, parallel ones. For example, CMHCs need to be able to use modern treatment methods for drug abusers and develop not only knowledge and skills but also training and tools.
- o How do different treatment components or phases of treatment contribute to client outcome? This is a complicated question, and it may be that structural research is more likely to pay off than process research. Substance abusers frequently need services to deal with psychiatric problems, pregnancy, lack of job skills, and general health.

- o Single State agencies and appropriate professional organizations should take the lead in licensing, credentialing, and accreditation of workers in the field. This would involve a systematic training program for clinicians and counselors.
- o Accept the fact that repeated episodes of treatment are probably necessary for those with serious substance abuse problems. These do not indicate failure on anyone's part, but merely reflect the nature of the problem and the culture.
- o Provide flexible scheduling, so that addicts can coordinate treatment with work.
- o Evaluate from the consumer's point of view. Clients can frequently provide information regarding the dynamics of treatment and gaps in service.
- o Undertake collaborative efforts with law enforcement agencies involving the criminal justice system in treatment-rehabilitation efforts.
- o Address the problem of improvement of the addict's overall general health.
- o In evaluation, address clinic size (number of patients) as it relates to success/failure in outcome measures; examine public vs. private programs.
- o Reconsider the role of urinalysis in treatment and its cost/benefit.
- o Link epidemiological studies with treatment studies and outreach strategies.
- o Treatment programs are needed which are geared to cocaine, marijuana, and multiple drug use. Programs are also needed to treat females and the geographically mobile.

Dr. Lipton, who is associated with the New York State Division of Substance Abuse Services, presented a paper on the State's interests in drug abuse research. In a survey of nine single State agencies, including such populous states as California, Illinois, Massachusetts, and New Jersey, Dr. Lipton found:

- o NIDA materials are used in monitoring, planning, and evaluation; DAWN, CODAP, high school and household surveys, monographs and technical reports were mentioned.
- o Some agencies are making extensive use of DARP reports.
- o NIDA monographs describing outcome studies were considered most useful.

- o Respondents felt a need for studies on cost-effectiveness of treatment, "how-to" manuals for treatment evaluations, bibliographies of treatment studies for program administrators, formatting of reports for planners and administrator rather than researchers, and more studies of nonopiate abusers.
- o Respondents suggested routine dissemination of a list of all treatment evaluation research projects and the reports generated by them, including statements of implications for treatment programs.

Several suggestions were made for dissemination strategies and sharing of experience by evaluators, administrators, and policymakers.

Policymakers note problems with evaluation research, in particular lack of clear statements of practical application in the field and the fact that frequently the research answers a somewhat different question than that which the policymakers are asking. Policymakers tend to adopt uncritically that research which supports their existing views and to pursue what they perceive to be their constituents' wishes, regardless of what evaluations show. The findings of evaluation research cannot reverse popular convictions which are upheld by policymakers. The more complex an evaluation, the more "jargon" used, the more scientific caveats, the more the policymaker is apt to disregard the conclusions.

Lipton proposed seven rules for successful evaluation research:

- o Establish a dialogue with the policymaker.
- o Move swiftly to produce.
- o Accept incremental improvement in staff, data systems, etc.
- o Make initial rough estimates and then refine.
- o Produce reports in four parts:
  - Executive summary and recommendations
  - Body of text with summarizing headlines
  - Conclusions in "bullet" form
  - All technical material in the appendix
- o Organize and present results by the applicable political jurisdiction.
- o Evaluation should be practical, pecuniary, and political.

A number of suggestions for treatment evaluation studies were presented.

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# Introduction

Frank M. Tims, Ph.D.

The purpose of this review is to assess critically our present state of knowledge regarding drug abuse treatment evaluation, identify major research questions which should be the focus of future efforts, and outline the best strategies for addressing these questions. The National Institute on Drug Abuse has made substantial investments in large, longitudinal studies of treated drug abusers as well as smaller controlled studies. These have contributed greatly to our understanding of treatment populations, histories, and outcomes, and have made a convincing case for treatment effectiveness. It is appropriate now that we begin a process of consolidation of our knowledge in this area and definition of future research priorities. Because a recent monograph edited by Cooper et al. (1983) deals extensively with methadone detoxification, methadone maintenance, and other pharmacologically based drug abuse treatments, these will not be of primary concern in this review, except as they are incidental to more general questions of treatment evaluation.

Evaluation has been an integral part of the Federal effort to develop and maintain a national system of community-based drug abuse treatment programs since it began in the late 1960s. The Drug Abuse Reporting Program (DARP), established under the auspices of the National Institute of Mental Health and subsequently supported by the National Institute on Drug Abuse, began as a management monitoring system which was designed also to be of value for treatment research. The DARP strategy has proven to be sound and useful in describing a treatment population we knew little about in those early days, in characterizing behavioral patterns and treatment experiences of those clients, and in evaluating the effectiveness of those programs and building the foundation for an extremely productive series of treatment outcome research studies.

The DARP research, described in this volume by Simpson, provided a substantive and methodological basis for another large-scale treatment evaluation, the Treatment Outcome Prospective Study (TOPS) which is described by Hubbard et al., also in this volume. At the inception of the DARP in 1968, the treatment system was embryonic, and concerned largely with the treatment of opioid addicts.

Community-based treatment was controversial, with methadone maintenance being perhaps the most visible focus of the controversy. Community-based treatment was unproven, and the basis for designing the treatment for any individual was usually nothing more than professional judgment. The TOPS was launched amid a growing body of empirical evidence regarding the efficacy of treatment for addiction, but when the system had undergone dramatic changes. Large numbers of individuals not addicted to opioids, with various nonopioids classed as their primary drugs of abuse and perhaps no history of opioid use, began to enter residential drug-free and outpatient drug-free programs, such that in 1979, clients reporting opioids as the primary drug of abuse accounted for less than half the clients in the federally funded treatment system (NIDA 1982).

The diversity of client populations presented new challenges to the TOPS researchers, not the least of which was the conceptual complexity inherent in characterizing the drug dependency of those whose drug abuse patterns might be widely varied and not explainable in terms of physical addiction. The TOPS research strategy followed that which had served the DARP well, a series of admissions cohorts comprising a client population which could be followed during treatment and sampled for followup studies after treatment. Chapters in this volume present data from the DARP over a considerable posttreatment period and preliminary analyses of the available TOPS data.

Within the context of treatment outcome studies, a large number of other studies have been undertaken with NIDA sponsorship, not to mention the considerable body of work sponsored by other agencies, most notably the Veterans Administration, which has supported both large scale followup studies (e.g., Veterans Administration 1979) and clinical investigations. NIDA-sponsored treatment research has included a well-designed study of therapeutic community clients (see De Leon, this volume) with measures of psychological functioning as well as behavioral outcomes. De Leon's research typifies the smaller scale, intensive research we have chosen to call "program based," because it is usually conducted by investigators affiliated with the program or cluster of programs being studied but does not necessarily involve rigorous experimental control. Other investigations which are in the category of controlled studies are described by Hall in her methodologically oriented chapter, as well as by O'Brien et al. in their discussion of studies of the efficacy of psychotherapy in the treatment of addiction.

The work of Anglin and the late Dr. William McGlothlin represents another of the pioneering approaches to the study of drug abuse treatment effectiveness. While the DARP, TOPS, and De Leon's therapeutic community studies considered the outcomes of treatment generically, Anglin and McGlothlin examined treatment policy in relation to outcomes. Their ability to impose quasi-experimental designs on treatment populations affected by given treatment policies and policy changes, such as compulsory treatment of addicts in California, sudden changes in methadone maintenance policy (including discontinuation of publicly funded programs), and local variations in clinic policy provided opportunities for these



scientists to study the impact of treatment policy in the natural environment.

Senay's chapter considers the clinical implications of the emerging body of knowledge regarding treatment outcomes and examines some treatment and research issues from his clinical perspective.

Since the Omnibus Reconciliation Act of 1981 dramatically changed the way in which Federal support is provided to drug abuse treatment, providing ADM block grants to individual States rather than having NIDA administer treatment funds, there have necessarily been changes in the relationship between NIDA and the States. The States are now more largely responsible for making treatment allocation decisions, and NIDA's mission is more that of a research Institute. The changes taking place in the community based treatment systems are in part a response to the new situation and in part a continuation of changes which were evolving before this shift. Since the States share many common concerns with NIDA where treatment evaluation research is concerned, it was felt that this review should also provide a forum for articulation of these concerns and interests at the State level. Lipton's chapter on "The State Perspective" presents his impressions based on contacts with evaluation researchers in a sample of State substance abuse agencies, as well as his own experience in the New York Single State Agency.

In the chapters which follow, the authors have attempted systematic presentation of their individual research areas in a field which is evolving and diverse in its perspectives. In the opening chapter, Dr. Jerome Jaffe, who led the Federal treatment effort as Director of the Special Action Office on Drug Abuse Prevention in the early 1970s, presents a succinct assessment of the state of the art in treatment evaluation, and sets the stage for this review.

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# Evaluating Drug Abuse Treatment: A Comment on the State of the Art

Jerome H. Jaffe, M.D.

We have been asked to address two fundamental questions at this review. First, "What do we know about the effectiveness of treatment of drug abuse?" Second, "Where do we go from here?" We must keep in mind that drug abuse is a chronic illness and that evaluating the effectiveness of treatment of chronic illness is unlike work in biochemistry or certain other fields in natural science, where the publication of a major finding often marks some sharp turning point in our understanding. Evaluating the treatment of chronic illness occurs over periods of years. Often, preliminary analyses are described at meetings, and later more detailed presentations (and sometimes revisions) eventually are published. Except where radically new treatments are introduced, the newly published must be weighed along with all previous findings. Although the field is still relatively young, there are now hundreds of papers on the treatment of drug abuse, and it becomes progressively less likely that any single new study will radically alter the inferences that have already been drawn from these observations. It is never quite clear just when we come to accept a given finding as valid.

Obviously, the discovery of some new medicine or some new intervention technique which represents a dramatic improvement over previously available procedures might require a major reassessment. Twenty years ago, the evolution of the therapeutic community and the introduction of methadone maintenance for treating opioid addicts represented such significant changes. No comparable dramatic changes in treatment techniques have occurred in the last 5 years. Indeed, it would be fair to say that the diverse interventions which we subsume under the very broad concept of treatment have not changed fundamentally over the past 10 years. What progress we have made in understanding what current treatment can and cannot do is based on a progressive evolution in our methods of assessment. This evolution is, in turn, based on progress in our understanding of the complexities of the various addictions, of the heterogeneity of the populations seeking treatment, and on a willingness to subject the data obtained to ever more sophisticated analyses. Progress is also based on a farsighted NIDA policy that continues to support treatment evaluation as a priority rather than an afterthought.

Having said that there are no dramatic breakthroughs, let me now make it clear that there have been some very significant advances in the state of our knowledge. After more than 20 years of systematic data collection, and after at least 10 years during which the treatment systems for drug abusers have been relatively stable, we are able to make some definitive statements about the long-term effectiveness of various treatments for opioid abuse and dependence. There are now ample data describing the probable short-term impact of various generic types of treatment (i.e., methadone maintenance, therapeutic communities, short-term detoxification, and drug-free programs) on typical urban heroin users. In general, the prognosis is far better than any one would have predicted in the early 1970s. We can state with some reasonable level of predictability how various background (demographic) characteristics of the patients (or clients) will influence the outcome at various points in time over the first year or two after contact with a treatment program. Not surprisingly, having a more stable family background, an intact marriage, a job, and a history of minimal criminality predicts a better outcome in most programs. Those with the highest levels of criminality prior to seeking treatment continue to represent a challenge to our capacity to alter behavior. We can make some general statements about the value of vocational rehabilitation efforts and other special social interventions. Over the short run, special programs and supported work do result in more addicts engaged in gainful activity. Over the long term, however, the differences between controls and those offered such services shrink to levels where the economic value of such programs becomes questionable, especially during times when so many people are unemployed. Having employment specialists at clinics appears to have some positive impact on retention rates, suggesting that such rates can be modified by changes in program content, but this apparently has little impact on actual employment rates (see NIDA 1982).

We also have data from studies which follow patients over long periods after entry into a treatment system (Simpson, this volume; Stimson and Oppenheimer 1982; Maddux and Desmond 1980; McGlothlin and Anglin 1981b; Vaillant 1978). These studies are generally concordant in presenting the natural history of a syndrome which is far less incurable and unremitting than was believed as recently as the 1960s, but is still more than sufficiently criminogenic and lethal to justify society's efforts to intervene and to treat it.

For certain kinds of treatment, such as methadone maintenance, our statements can be even more refined, and we can make general statements while patients are in treatment about the relative impact of varying program parameters, such as urine testing, dosage, and take home privileges, on retention and outcome. Additionally, we now recognize that the program and patient factors which contribute to retention of patients in treatment are not necessarily those which predict adjustment in the years after leaving treatment. These general findings, along with the medical tradeoffs involved in methadone treatment, have been summarized in

a recent NIDA monograph (Cooper et al. 1983). There now appears to be a general consensus on the limited value of either outpatient or inpatient detoxification for those addicted to opioids. For most types of programs, we can now describe in a general way the relationship of time spent in treatment to outcome over the next year. We can even offer some cost benefit analysis of the value of providing treatment compared to alternative social policies (McGlothlin and Anglin 1981a,b).

To be able to make such statements is a significant achievement. Yet, we are dissatisfied. We recognize that the relationships we have found to date between patient characteristics and outcome, while reliable, often account for only a small part of the variance, and that in any given case it is still not certain just what treatment, if any, would produce the best outcome for a given patient (see Rounsaville et al. 1982b; McLellan 1983). Equally important, we now recognize that a significant proportion of those seeking treatment do not stay in treatment for more than a few weeks; that for some individuals, especially those with high criminality and high psychopathology, treatment generally is of limited benefit. More recently it has been suggested that some programs are "toxic" for some patients (see McLellan et al. 1983; O'Brien et al., this volume).

About 5 to 10 years ago, a number of researchers hypothesized that a likely reason for our relative inability to predict treatment outcome was our failure to measure all the relevant variables and our tendency to analyze the data collected using one background variable at a time, rather than using more complex, but more appropriate, multivariate analyses. These shortcomings are being remedied in more recent evaluations of treatment, and these improved measures (especially of psychopathology) and more sophisticated analytical techniques represent the major achievement of the past 5 years.

Let me offer a few examples. Recent studies have gathered information on patients seeking treatment that goes far beyond the demographic and drug use histories that were the major data elements of earlier efforts. Several groups have done detailed investigations of psychiatric symptoms and diagnoses among patients seeking treatment. Kleber, Rounsaville, Weissman, and their colleagues in New Haven have documented that, in addition to drug dependence, the majority of opioid addicts seeking treatment have other psychiatric disorders that meet currently accepted diagnostic criteria. Among the more common diagnostic entities identified were major depressive disorders, antisocial personality, and alcoholism (Rounsaville et al. 1982d). McLellan, O'Brien, Luborsky, Woody and their coworkers in Philadelphia have found a very similar spectrum of formal diagnoses among veterans with drug and alcohol problems. They have also reported that the severity of psychological problems taken as a whole is a powerful predictor of several outcome criteria, such as illicit drug use, criminal activity, social productivity, and psychological adjustment, when these are measured 6 months after entry into treatment. Furthermore, the Philadelphia group finds, as have others, that

these traditional dimensions of change are relatively independent and are best predicted by past behavior on that specific dimension (McLellan et al. 1983). More significant for our concerns about evaluating treatment are the Philadelphia group's findings using multivariate analyses of relationships among patient characteristics at intake and outcome at 6 months after entry. The broad generalization from the early analyses of large-scale multicenter studies such as Drug Abuse Report Program (DARP), was that opioid-dependent patients do about equally well (on a composite measure of overall outcome) whether they enter a therapeutic community, a methadone maintenance program, or a drug-free outpatient program. The DARP study did not attempt to assess severity of psychological problems or psychiatric diagnoses. The work of McLellan and coworkers suggests that these conclusions from the DARP study must now be qualified and that some opioid-dependent patients, particularly those with severe psychological problems, do quite poorly when placed in the confrontational milieu of a therapeutic community and do significantly better in a methadone maintenance program. To what degree the better outcome is related to the pharmacological effects of methadone or the less demanding treatment environment is not yet clear. An additional finding is that those patients with fewest and least severe psychological problems did quite well in all treatment programs while those with the most problems did poorly in all. In the light of this work, it seems likely that the older findings on the effectiveness of treatment, most of which did not assess psychopathology or its severity, may have to be reevaluated.

#### WHY DID IT TAKE SO LONG TO FIND AN EFFECT OF PSYCHOPATHOLOGY ON OUTCOME OF TREATMENT?

Those not familiar with the evolution of science and medicine may well wonder why the kind of work just described was not done sooner. Why was it necessary to spend millions of dollars on the evaluation of treatment only to find that much of the work now may need to be redone or, at the least, reassessed? Since policy-makers may raise this question, we should be prepared to explain why those studies were appropriate for their time, and why they remain as important contributions. We should also explain that even as we move to new levels of sophistication we can already see the areas where further work will be required.

As the effort to evaluate treatment has evolved, the fundamental questions have always been the same. What are the relevant variables about patients, treatments, and environments that we need to measure, how can they be measured reliably, and what conceptual and analytic frameworks are best suited to understanding the relationships among the variables?

Even in the 19th century, researchers recognized the heterogeneity of opiate users and postulated that treatments and outcomes might be very different depending on who was using the drugs and for what reasons (see Terry and Pellens 1928). Yet, it seems to have taken almost 100 years to follow up on these early simple observations. Before offering some of the reasons why the recent

findings on the effects of psychopathology did not emerge 10 or 15 years ago, I should note that Kolb (1962) did report considerable diagnostic heterogeneity among the addicts seen in the 1920s, and there is an extensive literature on personality testing and psychopathology among addicts that dates back more than 40 years (Sutker and Archer 1983). Most of this work was directed toward understanding the etiology of drug dependence rather than accounting for differences in response to treatment. Indeed, the few recent studies which suggested that retention in treatment or outcome could be predicted from psychological testing or from typologies derived from cluster analyses of patient characteristics were largely ignored.

It is fair to say that for a long time it seemed that understanding the psychodynamics of an individual in a specific situation was more important than reaching agreement on what specific diagnostic category best matched the individual's symptoms and history. Formal diagnosis was not viewed as an overwhelmingly important issue. American psychiatry emerged fully from that era only in the early 1970s. It would take us too far from our topic to review the factors that brought about the deemphasis of psychoanalytic theory and the reemergence of a descriptive phenomenologically oriented nomenclature. Suffice it to say that the shift in emphasis permitted a revision of the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-III) which provided specific diagnostic criteria for each of the mental disorders. DSM-III was issued in draft form in 1978 and became official in 1980.

Even prior to the publication of DSM-III, however, there were research criteria for making diagnoses that could have been used to attempt to measure psychopathology and psychiatric diagnoses among drug abusers. Other factors retarded the measurement of such psychopathology. I will describe a few of these factors as I perceived them over the decade from 1968 to 1978.

The therapeutic communities built on the model of Synanon had developed an anti-medical, if not a broadly anti-intellectual, attitude from their beginnings. They were pleased when outsiders lauded their successes, but for the most part they did not look kindly on detailed analysis of outcome. In general, they kept minimal records, especially any that might suggest a psychiatric orientation. It is remotely possible that more attention to a thorough diagnostic evaluation of drug users seeking treatment would have led to such programs being redefined as medical facilities, with all the detailed regulation and malpractice exposure that such a redefinition might entail. However, I doubt if such concerns played a role in their early resistance to evaluation. In fact, some therapeutic community programs began using psychological testing and psychiatric evaluations more than a decade ago, but, for a variety of reasons, the findings were rarely utilized.

Neither were the early methadone programs overly enthusiastic about systematic psychiatric evaluations. In part, this was

because some early proponents emphasized that addicts were psychologically normal but for their abnormal drug hunger (Dole and Nyswander 1968). Also contributing to the lack of interest was the then current psychiatric nomenclature which seemed to be of little value in predicting who would respond to methadone maintenance. Lastly, psychiatrically trained personnel were exceedingly scarce during the rapid expansion phase of these programs (1966-1974).

Similarly, drug-free programs were often operated by non-professionals who, if not antagonistic toward medically trained personnel, often seemed threatened by researchers and evaluators. It is also possible that many program directors came to accept as proven what was originally only a hypothesis: that drug dependence causes the other problems (social and psychological) commonly found among drug addicts. If one believes that all problems show startling improvement when drug-related problems are successfully controlled, then it is unnecessary to attempt to measure those other variables, especially if drug use is easier to measure. The advent of inexpensive urine tests that provided an objective measure of drug use may have had the effect of devaluing the "softer" measures of interpersonal and psychological functioning. In any event, adding detailed psychological assessment to the other measures would have substantially escalated the costs of treatment evaluation.

Thus, there were at least five major factors militating against the incorporation of an additional dimension of formal psychopathology into the assessments of treatment: (1) the lack of agreed-upon criteria for categorizing and assessing psychopathology (as well as uncertainty about whether instruments standardized on patients not dependent on drugs were appropriate for those with drug dependence as a primary problem); (2) indifference or hostility of the largest treatment programs to such detailed assessment; (3) shortages of trained personnel; (4) the significant additional costs of adding these variables to the already long list of drug-, work-, and crime-related variables already deemed essential; and (5) previous work in which standardized personality tests of addicts in treatment had not led to the conclusion that such testing had clinical relevance. Perhaps there was a sixth factor as well. Perhaps those of us charged with conducting and funding evaluations did not believe that measures of psychopathology were important enough to be given priority over the other measures which, at the time, seemed more likely to predict outcome. It is possible that an overemphasis on the role of learning in the perpetuation of addiction contributed to this belief.

It remains for others to provide a weighting for the various factors that retarded work of this kind. For now it is sufficient to note that most evaluations of drug abuse treatment, even some of those recently published, pay scant attention to the possibility that the type and severity of psychopathology that is associated with drug dependence and abuse may represent a major variable that interacts with the kind of treatment provided to



determine long- and short-term outcome.

#### THE STATE OF THE ART: SOLIDIFYING ADVANCES

It is evident from this long explanation that I believe that the renewed attention being given to the measurement of psychopathology among drug users in treatment represents a significant recent advance, but not the only one. Each followup study of the large multicentered evaluations, such as DARP and Treatment Outcome Prospective Study (TOPS), has enlarged our appreciation of the importance of monitoring behavior over time (not months, but years) and of the need to measure outcome along several dimensions. Other recently published long-term outcome studies from England provide additional support for this view (see Stimson and Oppenheimer 1982). We should also count as significant advances those studies which, without endorsing any specific programs, meticulously demonstrate that crime rates among opioid addicts are far higher than the rates estimated from arrests or rap sheets, but are substantially reduced when illicit opioid use is controlled (Ball et al. 1983). Such findings, taken together with those studies of the impact of treatment programs on crime rates, further underscore the potential benefits to society of more effective treatment and interventions (Bowden et al. 1978; McGlothlin and Anglin 1981b; Anglin and McGlothlin, this volume).

We must now turn to the central question: What is the state of the art? We need to ask ourselves at the outset whether we are interested in the state of the art of evaluating treatment or the state of the art of treatment per se. If we are interested in treatment, then we should not limit ourselves to those papers that use the latest and most sophisticated evaluation methodologies, but should use all available information to take the pulse of the field. My overall impression is that with respect to the treatment of opioid dependence, the phase of expansion and rapid change is over. Some of the excitement is gone, and some programs seem more concerned with survival than self-improvement. For the typical "street addict," we may now be at an ideal time to reexamine the relationship of treatment to short-term and longer term outcome. I cannot recall a time when there has been such stability of program content coupled with such interest and competence in measuring outcome.

The objectives of such a reexamination should include efforts to resolve apparent inconsistencies in the extensive literature that has evolved thus far, to learn more about the characteristics of those who seem to do poorly in all of the available treatments, and about the nontreatment events that facilitate recovery from drug dependence.

We should probably give our highest priority to further verification of the findings by several groups of workers that over the short term (i.e., 6 to 12 months) the several dimensions of outcome (drug use, alcoholism, general health, work, crime, social and psychological well-being) are relatively independent. Relative independence of these dimensions implies that programs

directed primarily at treating drug dependence or drug abuse per se may not have major influence on other important measures of adjustment and social functioning. Such relative independence of outcome measures has been found among alcoholic and drug-dependent veterans in Philadelphia by McLellan and coworkers (McLellan et al. 1983), and among predominantly male nonveteran opioid users in New Haven by Kleber, Rounsaville, Weissman and their coworkers (Rounsaville et al., 1982b). More recent data from the multi-center DARP program as analyzed by Simpson, Savage, Sells and their coworkers (Simpson, this volume) are also supportive of this finding of independence of outcome dimensions, although the earlier DARP work often used composite scores to represent overall outcome (Simpson and Sells 1982). Additional data from other programs bearing on this question may already exist; it may be unnecessary to conduct new studies. If this relative independence is generally true for all programs, then the old question of which programs are best suited to which patients becomes more complex. It may be necessary to pay more attention to the components of individual programs to learn which program elements influence which outcome dimensions for which patients.

The most important implication of these findings may be for our efforts to communicate with policymakers. They will continue to ask, "Does treatment work?" They may be annoyed when they are told that the question can no longer be put in such simple terms.

In our efforts to consolidate our advances, we should give equally high priority to further independent verification of the clinical utility of measuring severity of psychopathology among drug users in treatment, as described by the Philadelphia group (McLellan et al. 1983). In my view, there is already ample verification of the high prevalence among drug abusers of psychiatric symptomatology and diagnosable disorders in addition to drug dependence. It is the clinical significance of this additional symptomatology that needs further investigation (see below).

#### WHERE DO WE GO FROM HERE? - RESOLVING INCONSISTENCIES AND FILLING GAPS

Given the heterogeneity of the programs and populations studied and the varied methods, no one should be surprised that different studies draw somewhat different conclusions from the data. Many such apparent inconsistencies could be cited, but I would like to focus on a select few.

In the studies by the Philadelphia group, severity of drug dependence per se, as measured by the Addiction Severity Index (ASI), did not appear to be a powerful predictor of outcome of treatment on any of the dimensions studied (McLellan et al. 1983). Although this finding is consistent with results of a study of addicted physicians (Morse et al. 1984), it is nevertheless disconcerting for both theoretical and empirical reasons. From a theoretical perspective, current views of drug dependence suggest that there is a core syndrome of impaired control over drug use that varies in severity along a continuum. One would predict on theoretical

grounds that the more severe the degree of dependence, the greater the likelihood of relapse and the smaller the likelihood that the individual could use the drug of dependence in moderation (see Edwards et al. 1981). Data from the fields of alcohol and tobacco dependence support this prediction about the severity of dependence. The DARP study also found evidence that among those who use opioid drugs, those who were addicted (used every day) responded quite differently to treatment from those who used less frequently (i.e., were defined as nonaddicts.) Those not addicted had better outcomes at followup. (Simpson and Sells 1982). Opioid addicted (i.e., using every day) vs. nonaddicted may be too coarse a dichotomy. One might expect that a finer differentiation would have been even more revealing, although we must admit that we do not have any idea of the shape of the theoretical curve of severity of opioid addiction. In all likelihood, there is some level above which the severity curve flattens out and above which further increases in severity do not affect outcome. We need to look carefully at how these various studies defined severity. On theoretical grounds, at least, we should not leave the matter hanging or expect it to be resolved automatically by some future megastudy.

One inconsistency may be more apparent than real. Heretofore, a consistent finding from studies of therapeutic communities (see DeLeon, this volume) and from the DARP multicenter study (see Simpson, this volume) has been that time in treatment was reasonably well correlated with better outcome. The data from the more recent TOPS multicenter study do not show pronounced time-in-treatment effect (see Hubbard et al., this volume). The differences may be a result of using differing time frames or criteria for completion of treatment. We should resolve this as soon as possible. The time-in-treatment effect may be telling us something important about the dependence process per se.

As I have pointed out, given the consistency of the finding, there appears to be little need to confirm that drug-dependent patients seeking treatment have more than their expected share of psychiatric symptoms and diagnoses. But what is not clear is how these findings impact upon participation in and response to treatment. As I have already noted, the Philadelphia group (McLellan et al. 1978, 1983; O'Brien et al., this volume) found that severity of psychopathology was a major predictor of outcome on several key outcome variables. In studies of therapeutic communities, depressive symptoms seem to predict early drop-out which, in turn, is correlated with poorer outcome on several dimensions (see DeLeon, this volume). In contrast, Kleber, Rounsaville, Weissman, and their coworkers in New Haven found that while depressive symptoms were quite common among opioid addicts, these symptoms appeared to show considerable spontaneous improvement (Rounsaville et al. 1982c,d). Further, while those starting treatment during a major or minor depression showed poorer response in terms of illicit drug use and psychological symptoms, starting with such symptoms was unrelated to work, crime, or remaining in treatment. The New Haven group found that although the prevalence of depressive symptoms was high, the severity of the depression was not.

Indeed, the depressive mood did not seem to be clearly distinct from subjects' usual mood. Further, the syndrome appeared to be self-limiting (Rounsaville et al. 1982c). However, the recent data from the TOPS project indicate that depressive symptoms among drug abuse patients can be quite severe if thoughts of suicide are considered a valid measure of severity (Craddock et al. 1982; Hubbard et al., this volume). The literature over the past 20 years contains numerous papers suggesting that depression and suicide are far more common among drug users than in the general population (see Rounsaville et al. 1982c; Dorus and Senay 1980). However, in Vaillant's longitudinal study of alcoholics, psychological symptoms tended to remit when the alcohol use ceased, leading Vaillant to assert that alcohol use caused depression, rather than the reverse (Vaillant and Milofsky 1982). It may be important to do separate analyses according to the class of drugs being used at entry into treatment. The TOPS data show a clear-cut trend for those abusing sedatives to have higher levels of depression than those using opioids only.

These comments on depression among opioid users are meant to be illustrative of the well-established scientific principle that new information leads to a few answers but to even more new questions. Having found that psychopathology is prevalent, we must now find to what degree it influences other dimensions of treatment outcome. The work of the Philadelphia group certainly suggests that, as measured by the ASI, severity of psychological problems is a major predictor of outcome along all dimensions, at least at the 6 month followup period. That work needs to be independently confirmed. We also need to find out whether it is composite severity that is critical, or if there is some significance to specific diagnostic categories, such as affective disorders or antisocial personality.

Related to the general topic of psychopathology are the unresolved questions of whether current psychotherapeutic or psychopharmacological interventions can ameliorate the psychopathology present and, if the pathology is influenced, whether the overall outcome of treatment is thereby altered. With respect to depression, the Philadelphia group appears to have positive findings for both pharmacological (Woody et al. 1975) and psychological interventions (Woody et al. 1983; O'Brien et al., this volume), while the group in New Haven finds little incremental benefit from either (Kleber et al. 1983; Rounsaville et al. 1983). There does appear to be a consensus that not only do patients who are diagnosed as having antisocial personality have more psychopathology and a poorer prognosis, but also that we have little to offer them in the way of special intervention. To the best of my knowledge, there are no effective treatments for antisocial personality. Given the prevalence with which the diagnosis is made and the negative implications for treatment outcome associated with antisocial behaviors, the absence of any promising approach represents a significant gap. In sum, there is consensus that psychopathology is common, but whether we can influence its course or whether doing so alters either short-term or long-term outcome

remains to be determined.

In a similar vein, I find myself puzzled by the inconsistent findings on prognostic significance of alcohol abuse among patients treated for drug dependence. Most studies have suggested that patients who use alcohol excessively while in treatment for other drug abuse problems have higher degrees of psychopathology, tend to drop out of treatment, and have a relatively poorer prognosis (Green and Jaffe 1977). However, recent findings from the group in New Haven show that such patients, despite having fewer psychological assests and more liabilities, do about as well as other patients when assessed 6 months after entry into treatment (see Rounsaville et al. 1982e). Other groups have recently reached similar conclusions about retention of alcoholics in treatment (Stimmel et al. 1983). Given the frequency with which the problem of alcoholism is encountered among opioid users, some further clarification would be welcome.

I am particularly perplexed by our seeming inability to reach consensus on the importance of dosage levels in the outcome of treatment in methadone programs, but since the most recent NIDA Treatment Research Monograph volume has been devoted to this question (see Cooper et al. 1983), I will not elaborate further on this point. For the same reason, I will simply note that I am similarly perplexed by the finding that, at long-term followup, those treated in methadone programs in New York do significantly worse in terms of return to opioid use (see Des Jarlais et al. 1981) than do opioid addicts treated in other parts of the United States (see Simpson, this volume; Hubbard et al., this volume) or in England (Stimson and Oppenheimer 1982).

#### OTHER PERSISTENT GAPS

There are some areas where inconsistent data would be an improvement. Despite the fascinating studies that have emerged over the past decade suggesting that there may be several genetically transmitted types of vulnerability for alcoholism, most efforts to evaluate drug abuse programs do not include detailed family histories of alcoholism, drug abuse, criminality, or mental illness. Family studies (i.e., direct interviews of family members) are rarely linked with treatment evaluation. Some of the work of Bohman, Cloninger, and coworkers (Bohman et al. 1981, 1982) suggests that for some forms of genetic vulnerability for alcoholism (especially that associated with having a father with severe alcoholism and criminality), the risk of developing alcoholism in the male offspring is increased about nine-fold, and that adoption at an early age into a nonalcoholic family does little to lower the risk. I think it would be useful to study family drug use histories of patients in treatment to determine whether such familial factors influence treatment outcome. To gather such information may not require entirely new studies. Since family history does not change much over time, ongoing evaluations might fill in such gaps in the baseline data during followup interviews.

There are additional areas where the tasks of evaluation are incomplete, and I will mention only a few. Despite such landmark studies as those of O'Donnell (1969), Stimson and Oppenheimer

(1982), Vaillant (1978), Murco et al. (1975), and Maddux and Desmond (1980), we still need to know more about the long-term natural history of the opioid dependence syndrome. In the DARP studies, which followed a relatively recent cohort of opioid users, each year following treatment the number of opioid addicts indicating illicit opioid use, non-opioid drug use, and arrests seemed to go down, and the number working seemed to go up. That this was not a tendency to minimize problems is suggested by the finding that heavy alcohol use stayed about the same or increased (see Simpson, this volume; Simpson et al. 1982). A tendency to improve over time, although not quite so marked in degree, has been seen among heroin users treated in London (see Stimson and Oppenheimer 1982). What are the pathways out of opioid addiction? Is this general improvement across groups originally treated in different programs a reflection of a general tendency for all symptoms to remit? Is the improvement an artifact due to selective attrition of those addicts with the poorest prognosis? How significant a factor is readmission to other programs? Is improvement over the long term a function of the degree of psychiatric impairment or diagnosis, or is it a matter of chance factors? In his work on alcoholics, Vaillant suggests that finding a caring new spouse, a better job, Alcoholics Anonymous or renewal of faith are important events (Vaillant and Milofsky 1982). Maddux and Desmond (1982), studying opiate addicts in Texas, suggest that moving away from the area where addiction developed was associated with improvement. If there is any way our followup studies can contribute to an understanding of the process of gradual improvement among contemporary cohorts of drug users, we should make the effort to gather the data and conduct the analyses.

The last area I will mention is the relative paucity of information on the non-opioid drug user. We should acknowledge from the outset that NIDA-supported treatment programs may not be seeing a representative cross-section of the individuals dependent on non-opioid drugs. Historically, in the United States, treatment for dependence on amphetamines, sedatives and alcohol was the responsibility of State and local governments and of the private sector. Patients dependent on these drugs were not even eligible for treatment at the U.S. Public Health Service hospitals at Lexington or Ft. Worth, but they had little trouble obtaining treatment in State or private facilities (assuming they could afford the latter.) When NIDA opened its treatment programs to patients with these problems, the programs were already characterized as programs for the "street users" and, for the most part, the more conventional drug-dependent patients found treatment elsewhere. Allowing for this fact, however, it is still vexing that we know so little about the natural history of these patients and of their response to treatment. It is all the more vexing because the number of patients seeking treatment for cocaine dependence and marijuana dependence is growing rapidly, not only in publicly supported programs, but in the private sector as well.

Brown's review (in press) of the treatment of non-opioid dependence is a comprehensive summary of the state of our knowledge, but that knowledge is disturbingly incomplete and has even more inconsistencies than are found in the literature on opioid use. In

general, Brown's review needs to be amplified with some effort to determine what proportion of the population with non-opioid drug problems is seen by the "treatment system." It is my general impression that, to a very considerable degree, most non-opioid drug users are to be found in the population of patients seen at the offices of general practitioners, internists, mental hygiene clinics, and alcoholism programs. Thus, it may be that the group with whom the "drug abuse evaluation system" has the most experience is the smallest part of the population with non-opioid problems. To the degree that certain categories of antecedent psychopathology (i.e., antisocial personality) are major determinants of both treatment response and longer term outcome, the prognosis for these "straight" patients may be considerably better than for those patients for whom non-opioid drug use is but one element of a more deviant lifestyle.

Related to this issue of non-opioid use are questions of the longer term biological consequences of drug use and abuse over the years. There is now a rapidly growing literature indicating that excessive alcohol consumption may be associated with altered brain structure and decreased performance on tests of cognitive ability. Some workers have suggested that such cognitive impairment may adversely affect the ability to benefit from therapy that requires retention of verbal material. There is some data suggesting similar deficits among barbiturate-sedative users, in contrast to the relative lack of such findings among opioid users (see Rounsaville et al. 1982a). Alcoholism and non-opioid abuse are problems for a high proportion of patients in NIDA-supported programs. Eventually we will want to know to what degree depressive symptomatology so common among drug abusers, particularly non-opioid drug users, is related to drug-induced anatomical or functional change, and to what degree such changes influence participation in and outcome of treatment and the longer term natural history. I do not underestimate the costs of such efforts, but I do not believe that large scale studies are required to study this question.

One last comment seems to be in order. Because NIDA was once the major source of support for treatment, there may be a tendency to see as its responsibility the evaluation of the programs or types of programs it once supported. I would argue, however, that NIDA's role should be the advancement of knowledge about the treatment process regardless of the source of support for that treatment.

Every researcher, if asked, can prepare a long list of recommendations and can extend a wish list of studies that ought to be done ad infinitum. Given the time and space available, my list ends here.

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# National Treatment System Evaluation Based on the Drug Abuse Reporting Program (DARP) Followup Research

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The Drug Abuse Reporting Program (DARP) was established in 1969 as a nationally oriented data system for the evaluation of community-based treatment services (Sells 1975; Simpson 1983). It began with the Federal funding of drug abuse treatment service components (primarily for heroin addiction) in six community mental health centers located across the United States, but it soon expanded to include a wide variety of treatment settings and approaches for drug abuse. Standardized data collection instruments for admission and bimonthly during-program progress reports were developed and later used to describe almost 44,000 clients in 52 different agencies from 1969 to 1974. Major treatment modalities included methadone maintenance (MM), therapeutic communities (TC), outpatient drug-free programs (DF), and detoxification (DT). During-treatment research, using a multiple cohort design, focused on classification of treatment types and patient types, development of outcome criterion scores, treatment retention and performance evaluations, effects of community context on outcomes, and other issues. Results of these studies have been reported in a five-volume series of books (Sells 1974; Sells and Simpson 1976), in a databook of descriptive tabulations (Simpson et al. 1976), and in professional journals and NIDA Treatment Research Reports.

In 1974, the DARP posttreatment follow-up research phase began, again using a multiple cohort design, to study outcomes associated with various drug abuse treatment strategies and client characteristics. A total of 6,402 clients in three separate DARP admission cohorts were selected for follow-up from 34 treatment agencies. These clients represented the four major treatment modalities of MM, TC, DF, and outpatient DT; in addition, a comparison group of intake only (IO) clients was included from persons who were formally admitted but who never returned to receive treatment in the DARP agencies. Sample selection procedures were stratified to insure adequate representation for analytic purposes with regard to age, race-ethnicity, sex, treatment type, length of time spent in treatment, and geographic location of programs. Altogether, 83% (N=5,340) of this sample were located; 73% were interviewed after granting informed consent, 5% were deceased, 1% were out of the country (mainly due to

military service), and 4% used their right to refuse the interview. The other 17% could not be located. The fieldwork for the follow-up studies was carried out under the direction of the National Opinion Research Center.

The major focus of the studies in the 6-year DARP follow-up research phase has been on treatment outcomes, as summarized in overview papers by Sells and Simpson (1980) and Simpson and Sells (1982a,b). These studies have used a variety of multivariate analytic strategies and independent treatment samples for replicating research findings, based on the first year, and 3 years following DARP treatment. In addition, this research series has also addressed related issues such as client satisfaction with DARP treatment services, use of other types of community services needed and received, leisure time activities, alcohol consumption, covariations of drug use with employment and criminal activities over a 3-to 4-year time period after DARP, effects of family and other social relationships on posttreatment outcomes, and long-range follow-up outcomes. (A bibliography to these papers can be found in Simpson and Sells 1982a.)

Currently, the DARP research is being extended to study follow-up outcomes 12 years after entry into DARP treatment for 697 heroin addicts who were admitted to treatment from 1969 to 1972 (and who were also interviewed in the 6-year follow-up study). By the time of this follow-up interview, at least 14 years will have passed since most of the respondents first began daily use of opiate drugs. In addition to the obvious questions about the current status of these former addicts and the permanence of abstinence reported in the 6-year follow-up interviews, factors involved in the initiation, maintenance, and cessation of addiction cycles will be addressed.

#### MAJOR RESULTS OF THE DARP RESEARCH PROGRAM

The original purpose of the DARP was to serve the treatment evaluation needs of a new federally supported service delivery system. However, the evaluation goals, procedures, and outcome criteria were unspecified, and there were no standards or comprehensive models for establishing a large-scale, field-based, drug abuse treatment evaluation system. Thus, the early years of the DARP research, reported in Sells (1974) and Sells and Simpson (1976), dealt with fundamental issues such as criterion development and measurement, as well as treatment definition and classification. This work also served to describe a substantial segment of the national drug abuse treatment clientele during the early 1970s, and it documented some of the changes in the treatment clientele over this time. This was an important conceptual phase for the long-range evaluation goals for the DARP, but the major results of the DARP research project have been based on the posttreatment follow-up studies of treatment outcomes.

## Treatment Effectiveness

The results of the various studies of client outcomes after DARP treatment are illustrated in Figure 1 (see Sells et al. 1979 and Simpson et al. 1978a, 1979, 1980). The DARP research has included opioid as well as nonopioid users, but most of the results reported in this paper will center on black and white male opioid addicts. This is the best represented subsample and it can be used most effectively to illustrate the major treatment outcome findings.

Since there frequently are differences of opinion on what constitute reasonable treatment outcome expectations for opioid addicts, two different outcome standards for the first year post-DARP are represented in Figure 1: (1) highly favorable outcomes are defined as no use of illicit drugs (except for less-than-daily marijuana use) and no arrests or incarcerations in any 1 or more months during the year; (2) moderately favorable outcomes are defined as no daily use of illicit drugs and no major criminality (i.e., no more than 30 days collectively in jail or prison, and no arrests for crimes against persons or crimes of profit). These simplified outcome standards emphasize the major criteria of drug use and criminal activity, and they accurately reflect the DARP findings from other studies based on more complex and sophisticated, empirically determined composite outcome measures (with time-at-risk adjustments) which also take into account employment, alcohol use, and return to treatment. Comparable subsamples of black and white males (N=2,099), from all admission cohorts in the follow-up studies, are included in the tabulations for Figure 1.

The data demonstrate the consistent DARP research finding that the most favorable outcomes were associated with the major treatment modalities of MM, TC, and DF; the DT and IO groups had significantly poorer outcomes. This same pattern of results was found using various strategies for statistically controlling and adjusting outcome measures with respect to client characteristics (since clients were not randomly assigned to treatments). It was also found that composite outcome differences between MM, TC, and DF treatments were not statistically significant; this finding will be discussed in more detail later.

## Prediction of Individual Client Outcomes

In addition to the between-group comparisons of treatment outcomes, the DARP research has included studies of variables associated with individual client outcomes within each treatment. Results based on stepwise regression analyses have captured the primary thrust of these findings (Simpson et al. 1978a, 1979, 1980) using client admission and during-treatment data as predictor variables. Analyses of individual outcome criteria showed that their respective preadmission baseline and during-treatment measures were generally related to posttreatment outcomes; for example, a poor employment history before and during treatment was predictive of unemployment after treatment. The most consistent and significant predictors of composite outcome measures, however, were criminal

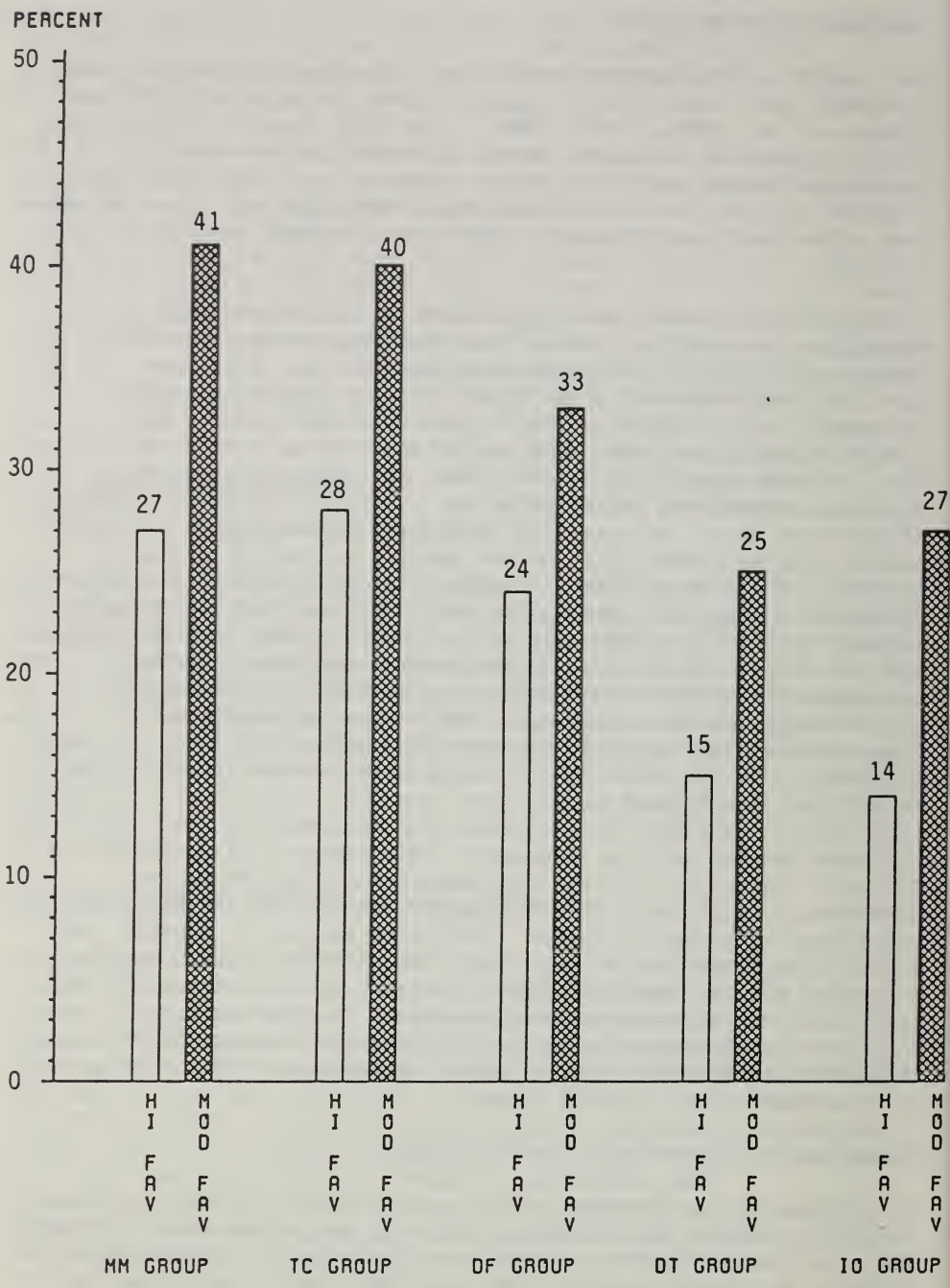


FIGURE 1. Highly favorable and moderately favorable outcomes in the first year after DARP treatment for black and white male opioid addicts in each DARP treatment group.

history and during-treatment performance; higher rates of preadmission arrests and incarcerations were related to poorer posttreatment outcomes, and, as expected, higher rates of criminal activity, drug use, and unemployment during treatment in the DARP were related to poorer posttreatment outcomes. During-treatment performance and the length of time spent in treatment were particularly significant predictors of outcomes. Figure 2 illustrates the relationship of tenure to the highly favorable outcome standard defined earlier -- that is, no drug use and no criminality (as indicated by no arrests or incarcerations). In some cases, up to about one-third of the variance in composite outcome scores for individuals in the separate treatment groups was accounted for by these predictor variables.

The association between treatment tenure and outcomes represents an important link in the evidence for drug abuse treatment effectiveness. Not only did the clients who remained longer in treatment have the most favorable outcomes, but the short-term (i.e., less than 90 days in treatment) clients in MM, TC, and DF reported outcomes that were no different from those of the DT and IO clients. Furthermore, the relationships between tenure (beyond 90 days) and posttreatment outcomes in the MM, TC, and DF groups were linear (see Simpson 1981).

These results suggest two things. First, and most obviously, treatments which last less than about 90 days appear to be of limited benefit, regardless of the type of treatment involved. Beyond 90 days, however, treatment outcomes improve in direct proportion to the length of time spent in treatment. The second point is methodological in nature. Specifically, the lack of significant differences between outcomes for short-term clients in the five DARP treatment groups contraindicates any widespread sampling bias that would have given preference to any given treatment group in the client assignment process.

#### Treatments During the Post-DARP Follow-up Period

Treatments which occurred during the post-DARP follow-up period have also been found to be associated with significant improvements in client outcomes, and these outcomes became more favorable as the length of the treatment contact increased (Simpson 1981, Simpson and Savage 1980). Thus, some of the major findings associated with DARP treatment were replicated by those from the post-DARP treatments.

Detailed inspection and classification of long-term outcomes throughout the entire follow-up period (i.e., ranging up to 6 years, depending on the time spent in DARP treatment) provided an alternative method of examining treatment effects in the DARP data base (Simpson et al. 1982). This study (based on the follow-up sample for the 1972-73 admission cohort) showed that 61% of black and white male addicts had achieved abstinence from opioid drugs for the last 1 or more years before the follow-up interview. Table 1 indicates that 19% became abstinent immediately after DARP treatment, and another 42% became abstinent later in the follow-up period. A total of 21% continued opioid addiction throughout the

PERCENT

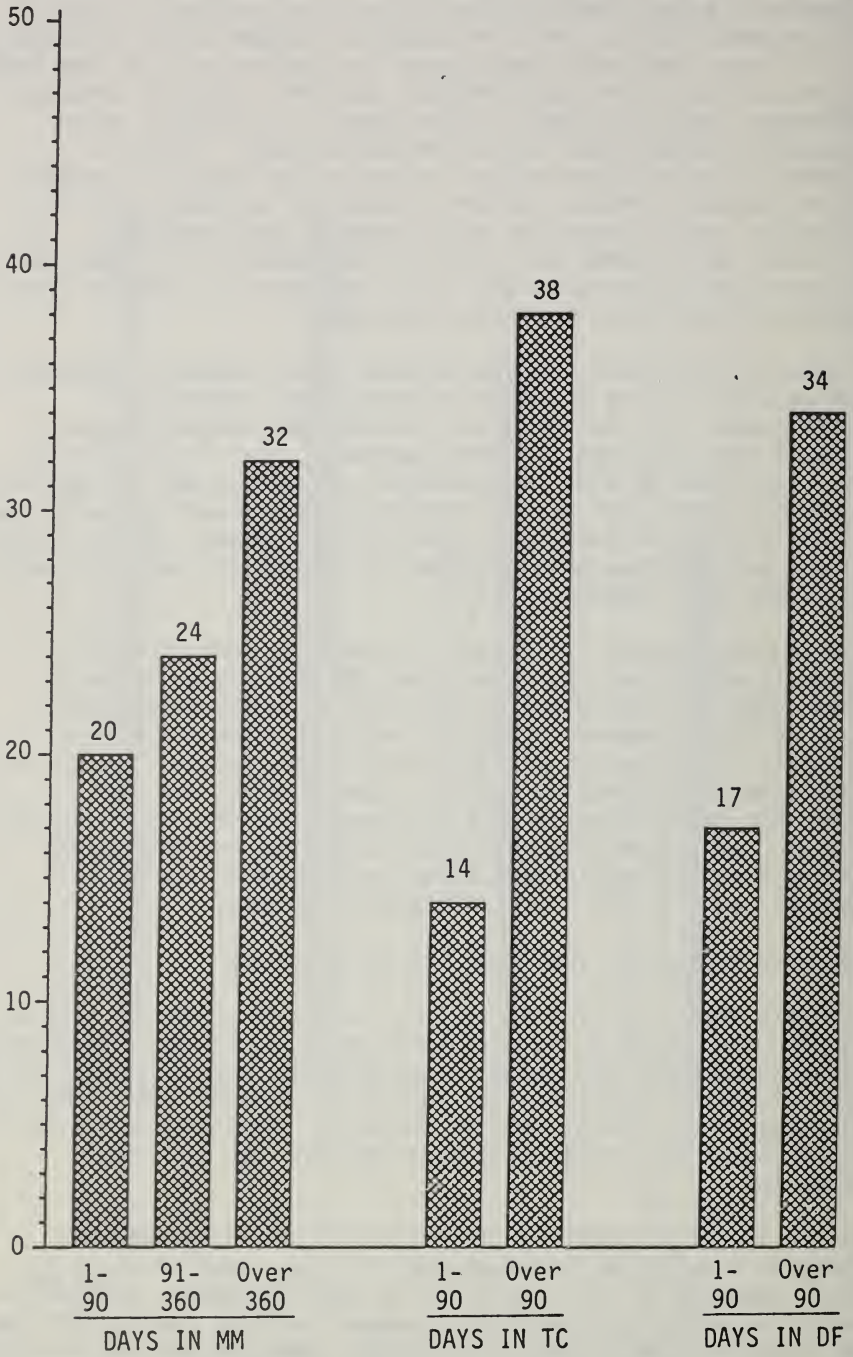


FIGURE 2. Highly favorable outcomes (no drug use and no criminality) in the first year after DARP treatment by length of time spent in MM, TC, and DF treatments for black and white male opioid addicts.



TABLE 1

*Classification of 6-Year Followup Outcomes  
of Black and White Male Addicts*

<u>Outcome Patterns</u>	<u>Total Number</u>	<u>% of Total</u>
<i>IMMEDIATE OPIOID ABSTINENCE --</i>		
<i>a. Without further treatment</i>	180	18
<i>b. With continuous treatment</i>	5	1
<i>DELAYED OPIOID ABSTINENCE --</i>		
<i>c. After further treatment</i>	134	14
<i>d. After jail/prison</i>	54	5
<i>e. After treatment and jail/prison</i>	35	3
<i>f. With continuous treatment</i>	119	12
<i>g. Without treatment or jail/prison</i>	81	8
<i>HEAVY AND SUSTAINED OPIOID USE --</i>		
<i>h. Without treatment or jail/prison</i>	36	4
<i>i. With long-term treatment</i>	47	5
<i>j. With short-term treatment or jail/prison</i>	115	12
<i>SPECIAL PROBLEMS --</i>		
<i>k. Heavy alcohol use</i>	45	5
<i>l. Heavy non-opioid use</i>	33	3
<i>m. Continuous jail/prison</i>	51	5
<i>n. Periodic opioid use</i>	35	3
<i>o. Abstinence to relapse</i>	20	2
<b>TOTAL</b>	<b>990</b>	<b>100</b>

follow-up period, while the last 18% had other special problems (such as alcohol or heavy non-opioid drug use, prolonged incarceration, or periodic relapse to heavy opioid use). Of the clients who achieved abstinence, about 75% reportedly terminated opioid use during DARP or a post-DARP treatment episode (i.e., outcome patterns a,b,c,e, and f).

## IMPLICATIONS OF RESULTS

There is still an unfortunate but widespread popular belief that drug abuse treatment is a failure and waste of public funds. The DARP research project, and other studies reported in this volume, however, provide convincing evidence for the effectiveness of drug abuse treatment.

The DARP work reported in this paper has focused on treatment evaluation, although other issues dealing with drug use, crime, employment, death rates and causes of death, and so on have also been studied (see Simpson and Sells 1982a). The DARP has contributed methodologically in identifying and developing posttreatment outcome evaluation criteria, as well as in exploring alternative analytic strategies for dealing with evaluation issues in applied settings. Seminal work on classification of drug abuse treatment and patient types has been carried out, and the posttreatment follow-up phase of the DARP research, which began in 1974, has demonstrated the feasibility of conducting such studies -- including a sufficiently high completion rate in relocating community-based drug abuse treatment samples (e.g., 83%).

The DARP results on treatment evaluation suggest that drug abuse treatment should continue for at least 3 months in order to achieve positive effects; this is also consistent with studies of therapeutic community programs reported by De Leon (this volume). Beyond that, posttreatment outcomes tend to improve in proportion to the length of time spent in treatment. This relationship was also found to be consistent across opioid addict and non-addict client subsamples, as well as across the major treatment groups, MM, TC, and DF. Follow-up outcomes for addicts in the DT and IO samples were significantly poorer than for those in MM, TC, and DF, but it is important to add that the outcomes of short-term (i.e., less than 90 day) MM, TC, and DF treatment clients were not different from the DT and IO clients; all of these particular clients received little or no treatment while in the DARP.

Approximately 60% of the DARP follow-up sample of opioid addicts re-entered some type of drug abuse treatment within the first 4 years after leaving DARP; readmission rates within the first year were 32% for TC, 33% for DF, 38% for MM, 40% for DT, and 43% for IO groups (Simpson and Sells 1982a). Since each treatment readmission reflects unsolved problems with continued drug use, this can be considered a negative outcome with respect to DARP treatment. At the same time, readmission to other treatments after DARP generally leads to improvements on client behaviors -- which serves to confound long-term evaluation efforts for DARP treatment. In other words, effective post-DARP treatments (as well as other positive relationships and life events) are combined with DARP treatments in

influencing follow-up outcomes. Indeed, this positive relationship between treatment readmissions and outcome improvements in the post-DARP follow-up period is documented by Simpson and Savage (1980). Its collective influence over time is also illustrated by a reduction in differences between DARP treatment group outcomes measured in the last year of the follow-up period, compared to the first year immediately after treatment (see Bracy and Simpson 1983, and Simpson et al. 1982). Thus, long follow-up measurement periods are especially sensitive to these uncontrolled influences, and posttreatment follow-up studies should adopt measurement strategies with this in mind.

Although some client characteristics (such as criminal history) were related to posttreatment outcomes, the relationships were generally weak, and they provided poorer outcome prediction than the treatment performance measures (including tenure and satisfactory completion of treatment). This result was elaborated in a study designed to investigate categories of similar clients -- defined using sociodemographic as well as criterion-relevant background and baseline measures -- and their relationship to treatments (Simpson and Savage 1982). Multiple discriminant and classification analysis yielded a set of empirically determined client types, which were then examined with respect to treatment types (defined on the basis of program goals, policies, and procedures for treatment, as summarized by Cole and James 1975). Comparisons of the posttreatment outcome criteria showed that there was no optimal match between these client types and treatment types.

Unfortunately, the lack of outcome differences between the MM, TC, and DF treatment modalities, as well as between the treatment type classifications within these modalities, provides little guidance for identifying significant dimensions of the treatment process. There is considerable variation between treatments, in terms of goals, service procedures, and client expectations, but each treatment appears to be effective in improving outcomes of its clients. Thus, it may be the amount of treatment contact (as reflected generally by tenure in treatment), and not so much the type of therapeutic approach, that is important. Retention in treatment also implies a client "treatability" factor, composed in part by motivation and determination to change behavior. Another consideration is the drug abuser's readiness to enter and participate in treatment, as opposed to involuntary treatment, usually associated with legal action or other pressures. Preliminary data now being collected in the DARP 12-year follow-up of heroin addicts indeed suggests that, in addition to the prominent role that treatment plays, a personal commitment to change after "hitting bottom," or becoming "tired of the life," marked the majority of recoveries from addiction. The same sort of personal evaluation and commitment to change has been reported by Waldorf and Biernacki (1981) in conjunction with recovered heroin addicts who were never in formal treatment programs.

The importance of personal commitment to treatment for drug abuse can hardly be denied. Nevertheless, the objective and reliable measurement of such commitment has been met with only limited success, probably because it represents a multidimensional and dynamic process; a person may resolve either before or during treatment to terminate drug use, but a personal commitment must then be sustained, strengthened, and converted to action. Support and guidance in this process can be seen as a major responsibility of the treatment program counselor, and Janis (1983) has recently discussed research on counseling procedures in dealing with such problem behaviors. However, support for changing drug use and other problem behaviors does not necessarily reside exclusively with a treatment counselor; instead, it may come from family, friends, or other social therapeutic support agents. Thus, treatment serves as an important setting which is conducive to client behavioral changes, but it is not necessarily the sole causal agent.

The DARP data have not discriminated between the major modalities of MM, TC, and DF in terms of effectiveness based on follow-up outcomes, but it would be inappropriate to conclude that treatment approach can be disregarded. Studies on the classification of treatment types have documented variations in goals, policies, procedures, etc., and these treatment differences address differences in client needs. For instance, methadone maintenance frequently deals with older addicts with longer histories of opioid use and criminal involvement, and the treatment strategy is designed to deal with these historically entrenched behavioral patterns in separate stages. Theoretically, drug procurement activities are first removed through chemical maintenance, while the therapeutic attention is devoted to developing and supporting client commitment to behavioral change; only later are the physiological aspects of addiction and withdrawal confronted. Drug-free therapies (especially in therapeutic communities), on the other hand, deal simultaneously with drug use withdrawal and resocialization. To be effective, this form of therapy (especially when used for opioid addicts) may require a greater initial level of personal commitment for behavioral change than is necessary in most methadone maintenance programs. In spite of the evidence that they generally have limited posttreatment effects, even detoxification programs can be argued to be beneficial as a stopgap service that helps address acute drug use problems. At the same time, the DT treatment group in the DARP research had the highest percentage of clients who later returned to treatment (usually MM programs), which suggests that detoxification efforts may help facilitate later entries into more complete treatments.

This more demanding requirement for client commitment may also account in part for the relatively high early drop-out rate for drug-free therapies. For example, 14% of MM clients left treatment in the first 90 days, compared to 49% of TC clients (including 17% in the first 15 days), and 43% of DF clients (Simpson et al. 1978b, p.48). Similar differences are also reported on more recent treatment samples in the Client Oriented Data Acquisition Process (CODAP) and the Treatment Outcome Prospective Study (TOPS).

## CONCLUSIONS

The DARP and other treatment evaluation studies have shown that positive behavioral outcomes are associated with treatment. However, we still do not know why. It is suggested that three basic factors are involved, and they should serve as the basis for further research.

First, it is reasonable to expect that a drug abuse treatment client should commit to changing his or her life in order to benefit from the treatment experience. This decision does not necessarily have to be firmly resolved at the time of entry into treatment, but a commitment has to be made soon thereafter. In other words, a medical model that implies that the "medicine will heal" does not apply -- the client must accept responsibility.

Second, successful treatment requires that counselors establish rapport with and influence over their clients. The essence of this relationship is that the client's decision to change is made, sustained, and translated into action. It requires guidance and support from the counselor, as well as a firm stand on what constitutes acceptable behavior. Different treatment modalities and programs may vary in the time schedule required for this sequence of actions, but the basic therapeutic process may in fact be very similar in all forms of effective treatment. We need to examine that possibility; indeed, the lack of outcome differences between the DARP MM, TC, and DF treatment types seems consistent with this idea.

Third, the client must remain in the therapeutic relationship for a sufficient period of time in order to benefit from the treatment experience.

This simple framework for characterizing the therapeutic process helps to emphasize several familiar evaluation issues. For instance, we need to know the client's psychological and behavioral status at intake; this includes background measures such as drug use and criminal involvement, as well as improved assessments of ecological considerations, perceived pressures, and motivations for treatment. The structural and procedural features of service delivery also need to be more clearly operationalized for treatment evaluation purposes. We have at least made a start in some of these areas, but we have to become more insightful and creative in future work since current treatment variables are able to account for only a limited amount of variance in outcomes. In addition, more attention needs to be given to the nature of the interactions between client and counselor.

Further procedural research should begin with the exploration, definition, and measurement of the essential dimensions of client characteristics, treatment structure, and counselor-client interactions. Then posttreatment follow-up studies are necessary to judge our success in improving outcome predictions. This sort of research effort should begin with intensive studies of treatment procedures within programs, and be expanded later to include

multiple-program comparisons for outcome evaluations.

Finally, the methodology for treatment evaluation research should be given attention in order to improve the quality and comparability of results across studies. Several lessons from previous research point to the importance of selecting well-defined treatment and comparison groups. It is also necessary to use a follow-up time frame (preferably a 1-year period) which allows adequate representation of outcome criteria, with acceptable statistical and distributional properties for analysis. This follow-up period for treatment evaluation should begin immediately after termination of treatment to avoid confounding influences -- such as other treatment episodes -- which accrue over longer term intervals. Studies of outcome status several years after treatment are essential for our understanding of the long-range implications of drug abuse, but their purpose and design should not be confused with the shorter-term goals of treatment evaluation.

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# Treatment Outcome Prospective Study (TOPS): Client Characteristics and Behaviors Before, During, and After Treatment

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The Treatment Outcome Prospective Study (TOPS) is a long term, large-scale longitudinal investigation of the natural history of drug abusers before, during, and after receiving services in publicly funded drug abuse treatment programs. Funded by the National Institute on Drug Abuse (NIDA), TOPS consists of the Intreatment Study and the Followup Study. The Intreatment Study included 11,750 clients in three annual admission cohorts - 1979, 1980, and 1981. To date, posttreatment studies of the 1979 admission cohort (12 and 24 months after termination) and the 1980 admission cohort (3 and 12 months after termination) have been conducted. A followup study of the 1981 admission cohort between 12 and 36 months after treatment will be undertaken in 1984. The TOPS research also includes studies of the outcomes for clients involved with the criminal justice system, particularly those referred to treatment by the Treatment Alternatives to Street Crime (TASC) programs. These programs were developed by the National Institute of Justice (NIJ) to identify drug users in the criminal justice system and refer them to treatment.

TOPS was designed to provide valid, current, nationally based information describing drug abuse treatment clients, treatment programs, and client behavior before, during, and after treatment to help plan, refine, and assess state and local treatment efforts. An important aspect of the TOPS design and approach is the identification and analysis of the association of client behaviors with client characteristics, community environments, and the treatment process. The TOPS data base provides the most current information from which reasonable during- and after-treatment improvement expectations across selected behavioral measures (such as alcohol consumption, drug use, mental health, criminal behavior, and economic productivity) can be developed. Improvements (or change) experienced by the TOPS clients can be viewed as the expected outcome for appropriate groups of treatment clients. Program managers, policymakers, and researchers can use the framework provided by TOPS to design, conduct, and interpret studies and evaluations of individual programs, groups of programs, and the general treatment effort.



TOPS was intended to expand our knowledge of treatment and its impact on client behavior. By systematically tracking and monitoring individuals over significant periods of time, a better understanding of the dynamics of drug treatment and client behavior is being developed to generate new, better focused research and to substantiate or reassess the findings of previous research on a broader scale and enable treatment programs to better direct their efforts to provide more meaningful, efficient, and effective treatment. To accomplish this objective, TOPS has employed the knowledge and useful aspects of methodologies developed in past efforts. The multi-year cohort, longitudinal followup design enables a comprehensive and systematic examination of many of the transitory and persisting changes in participating treatment programs, community environments, and in the characteristics and behavior patterns of drug abusers seeking admission to the treatment programs. One of TOPS' research objectives is to provide information that can be used to generate clear, testable hypotheses about treatment effects and to identify factors that may help determine why and for whom types of treatment do or do not work.

The purpose of this chapter is to describe the design of the TOPS research, summarize some of the key findings from the Intreatment and Followup Studies, and then present recommendations for future research. The overall design of TOPS has been the result of a systematic attempt to develop and implement state-of-the-art methodologies in drug treatment evaluation research, particularly in sampling, measurement, and analysis. Many of the key elements of the design can be incorporated into evaluation studies of different scopes and purposes. The early results of TOPS generally support the findings of previous evaluation research. The overall design, however, will allow researchers and policymakers to increase their understanding of treatment effects. The recommendations presented suggest ways to use the TOPS data and other studies to develop this understanding.

## APPROACH AND METHODOLOGY

A critical element in the successful implementation of TOPS has been the overall plan which calls for a full-scale longitudinal study implemented in phases. The recommendations of a group of experts in the area of drug treatment program research and evaluation during the initial planning phase of TOPS formed the basis for the overall plan and design. Many of these recommendations were to build upon and augment the basic design of the Drug Abuse Reporting Program (DARP) studies conducted from 1969-1973. Work on the initial stages of TOPS began soon after this planning meeting in 1975 (Williams 1975). After the basic data collection instruments and field procedures were drafted, a contract to complete the second and third stages of the TOPS was awarded to the Research Triangle Institute (RTI) in August 1977. The 18-month intreatment study period was divided into two phases: a comprehensive pretest data collection lasting

about 6 months and a pilot study data collection in 1979 lasting 12 months. The second (1980) and third (1981) years of the Intreatment Study, and Followup Studies for the 1979 and 1980 admission cohorts were subsequently added. A grant to follow up the 1981 admission cohort was approved and is expected to be implemented in 1984. Advisory Committees have met several times during the study to review the project and to recommend the implementation of subsequent phases of the research plan. The phased approach to the development and implementation of TOPS has enabled NIDA and the researchers to (1) determine the current needs TOPS can fulfill in terms of research and policy, (2) more precisely focus the TOPS effort to meet specific objectives, and (3) modify the design and instrumentation to best meet current and future research and policy needs.

The magnitude of the study and the complex problems inherent in this research required the careful consideration of a number of important methodological issues. This section highlights the key research design, sampling, definition and measurement, and analysis issues in the overall planning and conduct of the TOPS research.

### Research Design

The TOPS research program is principally a descriptive and correlational assessment of client behavior. Therefore, a survey design was selected as the most appropriate approach for the TOPS data collection. The 1975 Planning Group and other reviewers have generally advocated that TOPS be a large-scale, coordinated longitudinal study rather than a series of individual studies which might not be integrated and whose results might not be comparable.

The use of a longitudinal, prospective cohort design has two major advantages over other feasible designs. First, it permits the use of measurements collected at one time to predict behaviors at a later time. Second, the cohort design can provide an assessment of the impact of events occurring over time that might change, including the nature of treatment, the characteristics and behaviors of clients entering treatment, and the community environments that may affect program operations and client behaviors.

TOPS is principally a descriptive study with a prospective cohort research design. The prospective cohort design is best described as a nonequivalent control or comparison group design. The comparison groups that can be used in TOPS include a contact only group, clients who stay in treatment for a short time (e.g., 3 months), and clients that stay 3 months or longer. In addition, treatment utilizer groups can be created among clients who receive more or less intensive services. Clients can also be placed in various cohorts based on date of entry into treatment, date of discharge, chronological age, age of first addiction, or the occurrence of other significant events. But, as is the case

for any single quasi-experimental, clinical trial, or correlational study, TOPS alone cannot provide definitive evidence of causal relationships. The information available from TOPS, coupled in a coordinated effort with results from other studies such as DARP, clinical trials, treatment observations, TOPS substudies, and other related research will provide the multiple confirmation of results necessary to confidently attribute overt client behavioral changes to particular elements of the treatment process.

### Study Programs and Client Population

Rather than a random sample of programs or clients, cities and programs were purposively selected to reflect particular large- and medium-sized urban areas with certain types of drug problems and to include programs which were believed to have effective approaches to treatment. Stable, established programs representing major modalities were selected to permit an assessment of treatment process as it might optimally be conducted. Neither the cities nor the programs represent a national sample. A listing of the cities and numbers of programs is presented in table 1.

TABLE 1  
Number of TOPS Drug Treatment Programs in Each  
City, 1979-1981

Cities	Programs			Total <sup>a</sup>
	1979	1980	1981	
Chicago	4	3	3	(4)
Des Moines	4	4	-	(4)
Detroit	-	-	3	(3)
Miami	-	4	4	(4)
New Orleans	4	4	3	(4)
New York	5	5	4	(4)
Philadelphia	-	-	4	(4)
Phoenix	6	5	3	(6)
Portland	4	4	4	(4)
San Francisco	-	3	3	(3)
Total Programs	27	32	31	(41)

<sup>a</sup>Total indicates the number of unique programs involved in TOPS from 1979 to 1981. Seventeen programs were involved in TOPS for all 3 years. The other 24 programs participated for only 1 or 2 years. In addition to these, clients entered TOPS through TASC programs in Chicago, Des Moines, Miami, Phoenix, and Portland.

Intreatment Study. The first year of the full-scale Intreatment Study began in January 1979 and involved the voluntary participation of 3,712 clients at intake to 27 treatment units (outpatient

detoxification, methadone maintenance, residential drug free, and outpatient drug free) in six geographically disparate cities. Almost 6,000 additional intreatment interviews were conducted with these clients. The Miami and San Francisco programs were added in January 1980, and the Detroit and Philadelphia programs were added in January 1981. Intreatment data collection was terminated in December 1981. More than 8,000 clients were included in the study in 1980 and 1981; the total for the 3 years was 11,750. The numbers of programs and clients participating in TOPS are shown in table 2.

TABLE 2

Number of Drug Treatment Programs and Clients in Each Modality, 1979-1981

	Admission Cohort			Total <sup>a</sup>
	1979	1980	1981	
<u>Programs</u>	<u>Number of Programs</u>			
Outpatient Methadone	8	10	10	(12)
Residential	9	10	10	(14)
Outpatient Drug Free	7	10	9	(11)
Outpatient Detoxification	<u>3</u>	<u>2</u>	<u>1</u>	<u>( 4)</u>
Total Programs	27	32	31	41
<u>Clients</u>	<u>Number of Intake Interviews</u>			
Outpatient Methadone	1,135	1,563	1,486	4,184
Residential	944	929	1,018	2,891
Outpatient Drug Free	906	1,134	873	2,914
Outpatient Detoxification	521	305	367	1,193
Other <sup>b</sup>	<u>206</u>	<u>317</u>	<u>45</u>	<u>568</u>
Total Intake	3,712	4,248	3,790	11,750

<sup>a</sup>Total indicates the number of unique programs involved in TOPS from 1979 to 1981. In addition to these, clients entered TOPS through five TASC programs.

<sup>b</sup>Includes TASC clients not assigned to TOPS programs and clients not eligible for admission to TOPS programs.

The Intreatment Study employed a census rather than a sample of clients in each participating program except one detoxification program. A random sampling was used in that program which had more than 50 intakes per month. A census permits greater quality control, eliminates sampling error, and permits the observation of the total scope of the variety of behavior occurring in a single treatment program. Including all clients in a program allowed the study resources to be focused more directly and economically by basing data collection in programs.

Full-time, program-based data collectors (Program Researchers) were employed by RTI to interview clients in each participating program. Their work was integrated with the ongoing operation of the program. Eighty-two percent of clients were interviewed at intake. About 5 percent refused to participate. A large proportion of clients who contacted the program only one time could not be recontacted for an interview. Ninety percent of the scheduled intreatment interviews were completed.

Followup Study. The design of the followup study called for 1- and 2-year posttreatment followups of 1,310 clients entering TOPS programs in 1979 and 90-day and 1-year posttreatment followups of 2,300 clients entering TOPS programs in 1980. Twelve- to 36-month posttreatment followups of 1,380 clients in the 1981 admission cohort are scheduled to begin in 1984. Data collection for the 1979 and 1980 followup samples began in May 1980 and was completed in December 1982 with a completion rate of about 80 percent for each round of interviews.

The population from which the TOPS samples were selected is composed of all clients who entered TOPS programs and completed an intake interview in a given year of TOPS, 1979, 1980, and 1981. All TASC clients who were assigned to one of the outpatient drug free and residential modalities and who completed an intake interview were selected into the sample because there is special analytical interest in this group. For a comparison group, samples of TASC clients interviewed at TASC agencies who were not assigned to one of the TOPS programs were also selected (1979, n=35; 1980, n=100). Finally, 3 sample cohorts, one for each year, were selected from the non-TASC individuals who completed an intake interview. The total sample sizes of 1,345 clients for the 1979, 2,400 clients for the 1980, and 1,380 for the 1981 cohorts were determined by budget constraints with a goal of achieving acceptable precision (see table 3).

TABLE 3

Followup Sample Design

	Number of Clients Selected in each Admission Cohort		
	1979	1980	1981
Outpatient Methadone	323	841	422
Residential	421 (135)	556 (49)	407 (42)
Outpatient Drug Free	415 (130)	714 (186)	451 (138)
Outpatient Detoxification	151	189	100
TASC Clients Not Enrolling in TOPS Treatment	35 (35)	100 (100)	0
Total	1,345 (300)	2,400 (335)	1,380 (180)

Note. Number of TASC clients in each sample is shown in parentheses.

Modalities were treated as primary sample selection strata for the sample cohorts. Secondary strata for the 1979 cohort sample were treatment program by time-in-program (short term, long term) categories. However, the secondary strata for the 1980 and 1981 cohort samples were simply the treatment programs. Time in program is of interest as an analysis domain for the 1980 and 1981 samples but could not be accurately determined at the time of sample selection.

For the 3 sample cohorts, the objective of the allocation to primary strata has been to achieve equal variances (equal precision) for the 3 primary strata (methadone, residential, and outpatient drug free) means. A fixed sample size was allocated to the detoxification modality in each cohort because limited numbers of detoxification programs were included in the study, and the client populations appeared to be more homogeneous than in the other modalities. The objective of the subsequent allocation to secondary strata was, then, to minimize the variance (maximize the precision) of the associated primary stratum means, subject to the restriction that a sample size of at least 25 would be chosen for any treatment program with 25 or more eligible subjects. This minimum sample per program provides the opportunity to conduct individual program-based followup analysis.

#### Definitions

In social program evaluation it is critical to have meaningful and practical definitions of eligibility for the program and the study, program enrollment, and termination from the program that not only apply to all programs but also accommodate individual program differences.

An attempt was made to interview all drug abusers when they first physically contacted the treatment program to gain admission. Individuals were defined as eligible for an Intake interview if:

- o they physically visited the program (clinic) seeking admission or readmission, and
- o appeared eligible for the drug treatment program, and
- o initiated the program intake process, and
- o had not previously participated in TOPS in any program, and
- o had not previously been contacted by a Program Researcher (PR) in any program about participating in TOPS.

Individuals were excluded from the Intreatment Study if they:

- o were clearly not eligible for the drug treatment program, or
- o had previously participated in TOPS and met TOPS discharge criteria, or
- o had previously participated in TOPS in any program and discontinued treatment interviews for any reason.

Individuals clearly not eligible for a drug treatment program were, of course, not interviewed. For example, alcoholics with no drug problem, individuals with overriding psychiatric problems, and those not meeting any program eligibility criteria such as age or drug history were excluded.

In the Intreatment Study, interviews were scheduled for up to 2 years with all clients who were admitted to TOPS programs and who completed an intake interview. Interviews were conducted until a client:

- o refused or missed two consecutive intreatment interviews, or
- o refused further participation in TOPS, or
- o died or was rendered permanently not capable of participating in TOPS, or
- o terminated treatment at the participating program.

Two criteria defined termination from treatment:

- o a record of discharge and no readmission to the program, or
- o no physical contact with program for 30 days prior to scheduled Intreatment interview date.

For analyses and sampling purposes, the date of termination from treatment was defined as the official program record of the date of the client's:

- o last medication or physical appearance at the treatment center for a counseling session (for detoxification), or
- o last medication (for methadone maintenance), or
- o last night in residence (for residential), or
- o last physical contact for counseling (for outpatient drug free).

### Points of Interview

The longitudinal design of TOPS makes each interview point critical both technically and operationally. The major technical concerns in selecting the points of interview include the analytic and conceptual problems of (1) identifying key points in the treatment process, (2) identifying points where major changes in behavior occur, (3) plotting trends in behavior, and (4) establishing boundaries of time periods by chronological dates or key events. The operational concerns include (1) scheduling of intreatment interviews, (2) the respondent's ability to accurately recall behavior, (3) the effects of repeated testing and respondent burden, and (4) the timely notification of treatment termination.

To determine the best points of interview, retention patterns were examined and discussions were conducted with treatment administrators and clinicians. The retention patterns of a variety of programs clearly showed that there is a high dropout rate in the first month of treatment followed by a leveling off. Also, discussions with program staff indicated that major behavioral

changes were most likely to occur early in treatment. The points of interview for the Intreatment Study were designed to best assess behaviors over these time periods.

Past studies indicated that recall of events such as arrests and employment are reasonably accurate for up to one year. However, behavior such as drug use, criminal activity, or odd jobs are often telescoped or forgotten. Interviews at frequent intervals, then, were considered necessary to obtain more accurate recall of these behaviors and to assess attitudinal and evaluative data about treatment. Based on both technical and operational considerations, the interviewing schedule for the TOPS Intreatment Study was:

- o at initial contact with a program,
- o one month after treatment admission, and
- o every 3 months after treatment admission for as long as 2 years if the client remained in treatment.

In the followup study, attempts were made to interview clients in the 1979 cohort 3 and 12 months after treatment. For the 1980 cohort, interviews were scheduled 12 and 24 months after termination from treatment. In the followup of the 1981 cohort, clients will be asked about the 3 months and 12 months before the followup interview (usually 12 to 36 months after treatment termination). The 3-month interview used in the followup of the 1979 clients provides more detailed information surrounding termination. The followup after one year corresponds to the standard followup period used in a variety of evaluation studies. The longer term followups focus on behavior in the year prior to the followup interview.

## Measurement

TOPS is designed to provide data encompassing broad-based ecological, social, social-psychological, and socioeconomic perspectives. A large set of variables is being examined in the basic TOPS research approach. The general categories of variables covered in the TOPS interview are outlined in figure 1.

Whenever possible, standard measures of key variables are used such as Uniform Crime Report categories of crime and employment rates as measured and defined by the Current Population Survey of the Bureau of Labor Statistics. Information on many types of behavior is collected in three ways: (1) within event- or time-defined periods, such as age at first daily opiate use, (2) status at interview or on a particular date such as labor force participation in the week prior to treatment, and (3) within chronological time frames such as drug use during the first month in treatment.

In order to more fully understand the background and context of client behaviors during and after leaving a drug treatment program, information on the treatment received in a program and the socioeconomic and cultural system outside the program in



which the client must function is essential. Two TOPS sub-studies (not reported here) examining treatment process and community impacts were conducted to complement the basic In-treatment and Followup phases.

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- o Individual Background
    - Demographic characteristics
    - Life style and life changes
    - Drug and alcohol use and treatment experience
    - Illegal activities and criminal justice system involvement
    - Employment history and other socially approved productive behavior
  - o Treatment
    - Type of treatment (modality, environment, duration, orientation)
    - Client behavior during treatment (drug and alcohol use, illegal activity, employment, participation in treatment activities)
    - Treatment services received (counseling, vocational, medical, legal)
    - Treatment assessment (opinions about treatment, receipt of aftercare services, behavior occurring at the time of last program contact)
  - o Community
    - Context of drug use problems (indicators of drug availability, perception of treatment resources, knowledge of community services)
    - Social and economic factors affecting individual behavior (labor force participation, treatment availability, availability of community service)
    - Social support (support and involvement of family and others in treatment, family composition changes)
    - Community involvement (peer group relationships, community services received, involvement in the drug culture)
  - o Treatment Outcome
    - Drug and alcohol use
    - Illegal activity
    - Employment and other economic or socially approved productive behavior
    - Mental health (depression, problems)
    - Retention in treatment and successful completion of treatment
- 

FIGURE 1  
Types of Data Obtained in TOPS Client Interviews

## Data Analysis Approach

The TOPS data can be used for descriptive, comparative, and correlational purposes. Examples of specific questions that are addressed can be organized for each type of data analysis. As the analyses of the Intreatment and Followup Studies have progressed, information has become available to help specify questions in more precise and meaningful ways.

While the primary purpose of TOPS is to describe the characteristics and behaviors during and after treatment of cohorts of drug abusers contacting the TOPS programs, attempts are being made to understand differences in behaviors among clients with different backgrounds, receiving different types of treatment services, and facing different community environments. Models of client behavior are being developed which encompass the many individual and environmental factors that may influence behavior. Emphasis is being placed on both developing and revising models that more clearly describe the behavior of treatment clients during and after treatment, and generating and testing hypotheses about the association of such behaviors with variables looked at individually and within various classes.

Framework. Given the large amount of longitudinal, behavioral data collected, a conceptual framework is necessary to provide directions to the inquiries and to generate hypotheses that can be examined with the data set. To better organize the data analysis, general models are being used to indicate the general classes of variables and the temporal relationships that should be examined in the analyses. Four major classifications of variables are to be investigated in TOPS: client background characteristics, client behavior, treatment program services, and community descriptors. The major analyses focus on behavior indicators in and across the various time periods - before, during and after treatment (see figure 1).

Specifically, the major analyses are being organized around the major individual outcome variables: drug use, employment, mental health, and criminal behavior. Preliminary attempts were made to develop composite outcome variables with statistical combinations and theoretical patterns of outcomes. However, unlike some previous studies, the major outcome variables in TOPS did not appear to be related in a clear, systematic way. Therefore, the use of composite measures could obscure some important outcome results. Data books showing bivariate associations between selected predictor and outcome variables were prepared and examined. These books provided the key information for descriptive analyses within cohort and modality. Based on these analyses, variables are elected for multivariate analysis. One basic technique used is logistical multiple regression for categorical data. This approach is most appropriate for highly skewed, nonnormal distributions common in treatment outcome research. The models can be developed and the results presented in a form similar to a multivariate contingency table. Inter-

pretations are probability statements about outcomes for various combinations of client characteristics.

Time at Risk. In considering the effects of drug abuse treatment on behavior, the opportunity to engage in the behavior of interest must be considered. A number of drug treatment clients, especially those entering residential programs, were in restricted environments such as jails, prisons, hospitals or other residential treatment centers in the year prior to treatment. Their opportunities to use illegal drugs, commit crime, or work were limited because of these restrictions. In the first year after treatment 9 percent of methadone, 14 percent of residential, and 5 percent of outpatient drug free clients spent more than 9 months in restricted environments. Clearly these differences in opportunity could affect results.

A number of methods have been proposed to control for time at risk. The principal approaches include (1) deleting cases with little time at risk from the sample, (2) adjusting rates of behavior for time at risk, and (3) comparing behavior in time periods when an individual was at risk with periods when an individual was not at risk.

Restricted environment, however, does not necessarily result in elimination of the behavior of interest; rather it more likely limits involvement in the behavior. For example, illicit drug use is sometimes reported among individuals in residential drug treatment programs and inmates in jails and prisons. Other adjustments for time at risk in effect often impute a consistent level of high activity in crime or drug use for the period not at risk (Ball, et al. 1982). (The episodic nature of both activities suggests that levels of behavior may have been reduced even if the individual had remained at risk.) Thus, adjustments for time at risk may artificially inflate the level of behavior for some cases in the analysis. An accurate assessment of time at risk also requires detailed and time-consuming measurement of episodic behavior that is extremely difficult to incorporate into large-scale surveys and data analyses. Even in the most ambitious efforts to gauge time at risk, only some of the main elements of the beginning and end points of time at risk episodes and the various drug use, crime, and work activities periods could be recorded. Problems in recall and data reduction for analysis limit this approach to an even greater extent.

Both ratio and sample reduction strategies were used to assess the impact of different strategies for controlling for time at risk in TOPS. These analyses indicated that time at risk controls had a major impact on the pretreatment description of residential clients and a minimal impact on analyses of methadone and outpatient drug free clients.

For example, with a sample reduction approach in the residential modality, the proportion of clients using heroin in the year prior to treatment increased by less than 2 percent as successive controls for time at risk were introduced; but the actual number of clients using heroin decreased by half. Even though these clients were in restricted environments for more than a month, a significant proportion of them reported weekly heroin use over the period of a year. Were individuals in restricted environments removed from the analyses, information on a substantial number of clients who had a serious drug problem would not be available. Similar findings hold true for the followup. Of the almost 200 clients who reported 40 or more weeks not at risk in the year following treatment, about one-third reported committing a predatory illegal act during that year. This rate for a "not at risk" group is higher than that for the TOPS followup sample which was at risk. These results exemplify the type of trade-off that is made when time at risk is controlled. Because one of the major goals of TOPS is to describe the natural history of drug use among clients before, during, and after treatment, it seems appropriate to first describe the actual level of behavior without adjustment for time at risk.

There are a variety of reasons why an individual uses his or her present level of drugs (e.g., cost of drugs, availability of drugs) in addition to time at risk. The early analyses of time at risk demonstrate that controlling for time at risk is a very complex theoretical and analytic issue. Alternative approaches should be carefully considered in terms of their overall impact on the results. Even inclusion of a time at risk control in multivariate analysis could result in spurious and misleading findings. The impact of time at risk is being carefully considered in all TOPS analysis, but these preliminary results indicate that adjustment for time at risk may generate greater bias than a more straightforward presentation of descriptive data.

## OUTCOMES DURING AND AFTER TREATMENT

Changes in criminal behavior, employment and other socially productive activity, and the use of illicit drugs have repeatedly been used to evaluate program effectiveness as has program retention. A number of reviews of studies of treatment (Sells 1979; National Institute on Drug Abuse 1981; Quinones et al. 1979; Simpson et al. 1979; Simpson and Sells 1982) have concluded that overall there is evidence that a number of treatment approaches for drug abusers are effective. Although important changes in client population and treatment have occurred since these studies were conducted, results from TOPS generally support these conclusions. In the following sections, outcomes during and after treatment for retention, drug use, alcohol consumption, depression, illegal activity, and employment are summarized.

## Outcomes During Treatment

The analyses reported below examined behavior during treatment on a variety of indices for all three TOPS admission cohorts. The basic measure used was the behavior during first 3 months in treatment. The use of the 3-month measure provides a large sample for analysis of changes during treatment and, in general, behavior over the first 3 months was very similar to behavior during the first year in treatment.

Retention. Outpatient drug free clients are most likely to leave treatment in a week or less (21%) and 4 weeks or less (36%). By 3 months in treatment, more than 60 percent had dropped out, transferred or completed treatment.<sup>1</sup> Methadone clients are least likely to leave treatment at any of the early stages, and 3 months after intake 65 percent remain in treatment. At 6 months, well over half remain. More than a quarter of residential clients drop out in the first month of treatment. By the end of the third month, 56 percent of the clients entering in 1979 or 1980 had dropped out, transferred or completed treatment.

Almost 16 percent of all clients had either not used drugs or had only minimally used drugs in the year before entering treatment. This ranged from 14 percent of methadone clients to 19 percent of outpatient drug free clients. Most of these clients had transferred from other treatment programs or were in jail or other institutions immediately prior to treatment. Residential clients were most likely to reduce use of their primary drug. Ninety-nine percent of those reporting more than minimal drug use in the year before treatment reported at least some reduction in the first 3 months. For 95 percent, this reduction was "large." Nine out of 10 methadone clients reporting more than minimal use at treatment entrance experienced a reduction in use. For more than 80 percent this reduction was "large." Outpatient drug free clients were least successful in reducing their drug use. About a third of those classified as more than minimal users at entrance had continued or increased that use at 3 months in treatment, though 45 percent of users reported a large reduction in use.

Alcohol Consumption. A four category quantity-frequency index of alcohol consumption was constructed. Heavier consumers of alcohol were defined as those who drank 2 or more ounces of absolute alcohol one or more times a week. More than a third of methadone clients were nondrinkers or low level drinkers in both the year before treatment and the first 3 months in treatment. Of those who drank, almost a quarter of the methadone clients increased their alcohol consumption in treatment, but 34 percent reported at least some reduction in use.

Eighteen percent of outpatient drug free clients were nondrinkers or low level drinkers in the year before treatment and the first 3 months in treatment. Of those who drank, 22 percent

of the outpatient drug free clients increased their alcohol consumption in treatment; but 32 percent reported at least some reduction in use.

Almost 40 percent of residential clients were nondrinkers or low level drinkers in both the year before treatment and in the first 3 months in treatment. Of those who did drink, only 7 percent increased their alcohol consumption to the moderate or heavier levels in treatment and, as would be expected, almost 90 percent reported some reduction in use.

Depression Indicators. Clients were asked if they experienced three indicators of depression: (1) being so depressed they could not get out of bed, (2) suicidal thoughts, and (3) suicide attempts. Forty-six percent of all methadone clients reported having been depressed in the year before intake. More than 60 percent of those remaining in treatment at 3 months, however, reported depression for the pretreatment and/or in-treatment periods, indicating that depressed clients tend to stay in methadone treatment. The same tendency for depressed clients to remain in treatment holds for the other two modalities. At 3 months in treatment, more than 22 percent of all respondents show some signs of depression. Outpatient drug free clients are most likely to be depressed (29%), followed by those in methadone (24%) and residential (15%) programs. About 40 percent of those remaining in treatment at 3 months report having recovered from depression. Outpatient drug free clients are least likely to report recovery (35%), followed by methadone (39%) and residential (50%) clients.

Illegal Activity. More than 40 percent of all clients reported some predatory illegal activity (assault, robbery, burglary, larceny, fraud, or stolen property) in the year before treatment. Residential clients were much more likely to report a predatory act (62%). About a quarter of the methadone and outpatient drug free clients (more than 70% of those who had any predatory activity before or during treatment) reported cessation of predatory illegal activity during treatment. The outpatient drug free programs were less successful at reducing crime among the clients; about one in four clients who had reported an illegal act before treatment reported continued illegal involvement. The reports of residential clients, of course, plummeted. Of residential clients who had reported activity, 97 percent reported cessation during treatment.

Full-time Employment (35 or more hours per week). Half the methadone clients remained unemployed during treatment as did more than a third of the outpatient drug free clients. At 3 months in treatment, more than 30 percent of outpatient drug free clients worked full time or increased their work to that level, a slight improvement over intake. The percentage of methadone clients working full time in treatment remained about the same as at intake (24%). Because of the design of most

residential programs, few clients work outside the program during the first 3 months in treatment.

### Outcomes After Treatment

How clients function in the first 12 months after terminating treatment is a useful indicator of the impact of treatment. Behavior patterns during the first year may also affect longer term outcomes. Thus, this first year is a major focus of the TOPS followup analysis.

The data presented in this section are for the merged 1979 and 1980 followup samples. Merging the samples is appropriate for a general description of outcome. It does not imply that the two cohorts are equivalent. Differences between the cohorts have been found that warrant separate analyses in the future. In this preliminary examination of the data, the followup results were analyzed by two time-in-treatment groups for each modality: a short-term group that stayed months 3 or less, and a long-term group that remained in treatment more than 3 months.

The analyses described in the following sections do not include controls for a variety of factors, especially three key variables: cohort, treatment during the followup period, and time at risk. As described earlier, there are important differences among the three TOPS cohorts both in terms of the programs included and the changes that occurred in the programs. We also noted that results are affected by treatment after TOPS and the opportunity to engage in various behaviors.

Many clients, especially those in the methadone modality, remained in the TOPS program throughout the followup period; many other clients left treatment but had then been admitted to the same or another drug treatment program and were in treatment all or some of the time during the followup period. Other clients were incarcerated or had limited opportunity to use drugs, commit crimes, or find jobs during the followup period. Preliminary analyses have revealed that more positive behaviors are reported by clients who also report more involvement in treatment during the followup period. A similar analysis for clients with different amounts of time at risk in the followup period indicates that opportunity does affect the level of behavior reported but in a more complex way than previously believed.

The TOPS initial descriptive followup results (see table 4) are generally consistent with the DARP followup results. There were major improvements in drug use and criminal activities after treatment in all modalities, though the rates do not appear to be as good as those found while the clients were in the treatment program. Those clients who remained in treatment longer appear to have more positive outcomes.

TABLE 4

Comparisons of Behavior One Year Before and One Year After Treatment  
for Clients Remaining in Treatment 13 Weeks or Less and More than 13 Weeks

	Outpatient Methadone		Residential		Outpatient Drug Free	
	<13 Weeks Before	>13 Weeks After	<13 Weeks Before	>13 Weeks After	<13 Weeks Before	>13 Weeks After
<u>Type of Weekly or Greater Drug Use</u>						
Heroin and Narcotics	17.9	10.2	14.5	4.9	12.8	7.0
Heroin not Narcotics	47.5	23.3	54.8	14.1	18.3	10.9
Narcotics not Heroin	10.5	10.5	9.0	6.3	18.2	10.4
Multiple Nonopioids	2.3	1.8	2.1	3.2	11.6	6.3
Single Nonopioid	4.2	7.1	3.4	13.9	14.1	14.7
Alcohol/Marijuana	12.5	29.6	10.6	37.1	15.7	30.1
Minimal Use	5.1	17.4	5.6	20.6	9.1	20.5
<u>Type of Alcohol User</u>						
Nondrinker	30.2	34.1	35.3	37.6	31.2	30.9
Infrequent/Light	10.9	8.2	13.8	12.4	7.8	8.0
Moderate	37.1	39.6	25.8	26.5	15.4	23.2
Heavier	31.9	28.1	25.1	23.5	45.5	37.9
<u>Depression Indicators</u>						
None	43.1	68.4	42.5	64.9	36.9	61.6
Depressed	25.0	17.6	26.8	22.8	20.3	17.8
Suicide Thought/Attempts	31.9	14.0	30.7	12.2	42.8	20.5
<u>Predatory Illegal Acts</u>						
None	58.2	72.8	67.7	80.3	39.7	57.0
1-10	27.7	16.3	19.5	13.3	32.6	28.3
11 or more	14.1	10.9	12.8	6.4	27.7	14.7
<u>Weeks of Full-Time Work</u>						
None	44.5	50.4	47.5	59.7	39.2	41.8
1-39	29.4	29.7	29.5	21.3	47.3	43.3
40&2	26.1	19.9	23.0	19.0	13.5	14.9
Sample Size	n=386	n=541	n=380	n=340	n=553	n=292



Post-TOPS Drug Treatment. Consistent with DARP findings, a substantial proportion of TOPS clients were in treatment during the followup period (see table 5). Forty percent of short-term and 60 percent of long-term methadone clients were in treatment during the TOPS followup period. Most of the long-term clients who reported 40-52 weeks of post-TOPS treatment were methadone maintenance clients who remained in the original TOPS program throughout the followup period. These clients were interviewed with a Long-term Interview form, and their data were included in the long-term sample. The proportions of clients from residential and outpatient drug free programs returning to treatment were much lower than for methadone clients. About 30 percent of short-term and 40 percent of long-term residential clients reported treatment in the followup period. About one of 4 outpatient drug free clients reported treatment.

TABLE 5

Number of Weeks in Drug Treatment in the Year  
After Leaving TOPS Treatment by Modality and  
Time in TOPS Treatment

Number of Weeks	Outpatient Methadone		Residential		Outpatient Drug Free	
	<13 Weeks	>13 Weeks	<13 Weeks	>13 Weeks	<13 Weeks	>13 Weeks
None	59.7%	38.9%	71.3%	61.9%	76.2%	78.5%
1-13	11.1	6.2	14.5	9.7	12.2	5.9
14-39	10.1	8.9	7.5	13.6	6.2	5.1
40-52	19.1	45.9 <sup>a</sup>	6.8	14.9 <sup>a</sup>	5.5	10.6 <sup>a</sup>

<sup>a</sup>Clients who remained in the TOPS treatment program throughout the followup period are included in the calculation of these percentages.

Clearly, treatment in the followup period must be considered as an important covariate of behavior in the followup period. The preliminary results reveal a nonlinear relationship for methadone clients. For example, long-term clients who report no treatment or 40-52 weeks of treatment report less heroin use (32%) and predatory crime (18%) than clients who report 1-39 weeks of treatment (60% heroin use and 32% predatory crime). Similar patterns of predatory crime and treatment were found for long-term residential and outpatient drug free clients. These curvilinear relationships can be taken into account in multivariate analyses with the use of dummy or categorical indices of post-TOPS treatment.

Drug Use. There is a dramatic reduction in the use of the client's primary drug. In all modalities more than one-third of the clients report not using their pretreatment primary drug during the followup period.

After methadone treatment, daily or weekly use of heroin and other narcotics was decreased by 50 percent for short-term clients, and by 70 percent for clients remaining in methadone treatment for 3 to 24 months. Only one of 10 clients who remained in methadone treatment throughout the TOPS followup period reported weekly or greater use of heroin or narcotics. About 20 percent of all methadone clients reported no weekly use of alcohol or any other drug in the year after treatment.

Over 20 percent of the short-term residential clients and one-third of the long-term clients reported no weekly use of any substance in the year after treatment. Another third of these former clients reported weekly use of marijuana and/or alcohol only. These findings are even more impressive considering that pretreatment multiple use patterns were reported by three of four residential clients.

For the outpatient drug free modality, one in five short-term clients reported no weekly use of any substance in this year after treatment, and 36 percent reported weekly or greater use of only marijuana or alcohol after treatment. One-fourth of the long-term clients reported no weekly use of any substance in the year after treatment, and half reported weekly use of alcohol and/or marijuana only.

Alcohol Use. Although the proportions of residential and outpatient drug free clients reporting heavier alcohol use after treatment were 5 to 10 percent lower than before treatment, drug treatment did not appear to have much impact on drinking. About 3 in 10 clients could still be described as heavier drinkers after treatment.

Illegal Activity. Reports of illegal activity were much lower after treatment, especially for clients remaining in treatment more than three months. Only 20 percent of long-term methadone clients, 30 percent of long-term residential clients, and 20 percent of long-term outpatient drug free clients reported illegal acts in the year after treatment.

The largest changes in predatory illegal activity occurred for residential clients. Where 60 percent reported at least one act in the year before TOPS treatment, only about one-third reported activity in the year after treatment. Smaller decreases in illegal activity were reported for methadone and outpatient drug free clients. There still appeared to be a group of about 5-10 percent of the clients in all modalities who commit a high number of predatory crimes. Many appear to be the same clients who report committing high numbers of predatory criminal acts before and during treatment.

Depression Indicators. Clients in all modalities reported a substantial decrease in indicators of depression. After treatment, about two-thirds of all clients reported no signs of depression. Reports of suicidal thoughts or attempts fell from about 30 percent before treatment to 13 percent after treatment for both long- and short-term methadone clients, from about 40 percent before to 20 percent after for residential clients, and from 49 percent before to 24 percent after for outpatient drug free clients. There did not appear to be major differences between the 2 time-in-treatment groups. Despite the improvements in reports of depression indicators after treatment, suicidal thoughts and attempts still appeared to be a significant problem for 10-25 percent of clients.

Full-time Employment. The results for employment are mixed in the three modalities. Fewer methadone clients worked in a full-time job in the year after treatment than the year before treatment. A troubling decrease of about 10 percent was also found in the proportion of clients who reported working full time 40 or more weeks. This result may, in part, be accounted for by the poorer economic conditions after treatment.

A more positive picture emerges for residential and outpatient drug free clients who remained in treatment more than three months. For these clients there was a marked increase in the proportion who worked full time for 40 or more weeks (12.4% to 24.8% in residential and 24.7% to 38.7% in outpatient drug free). We hypothesize that clients who increase their full-time employment are those who worked full time for at least a few weeks in the year before treatment. There is little change in the percentages of clients who report no full-time work. Many of these clients may be housewives, the disabled, or students who did not seek full-time work. Besides employment, other socially productive activities are being considered in analyses to measure social and economic improvements after treatment.

## RECOMMENDATIONS FOR RESEARCH

The conduct of the TOPS research, the nature of results to date, and questions raised about the results by State planners, as well as researchers, have generated a number of new issues and questions.

Many new research questions involve moving beyond the basic question of whether treatment "works." We must focus more on how treatment influences behavior, what types of clients benefit most, and how long after treatment and under what conditions behavioral changes persist. Policy questions involving cost-effectiveness, organization and focus of treatment systems, and provision of different types of services for different types of clients need to be continually modified to reflect new knowledge emerging from studies of treatment effectiveness. Many of the questions can be addressed with existing data from TOPS or other studies. However, a number would require additional further study.

We have organized our recommendations for future research into four areas. The first is centered on the need for studies of three general issues:

- o characteristics or types of clients,
- o nature and components of treatment process, and
- o persisting direct and indirect effects of treatment.

The second area involves the analysis approaches that can be used to investigate these issues. We stress the need for

- o clear variable definitions and basic model construction,
- o utilization of existing data sets, and
- o replication and generalization of findings.

The third recommendation is the development of a useful, detailed plan for future data collection efforts including:

- o continuing program-based data collection,
- o long term followup, and
- o linkages and integration of clinical trials and individual program-based studies with a more representative data base.

A final recommendation is for studies to determine how to best organize the drug treatment and other health service delivery systems, including alcohol and mental health systems. Budget constraints and increasing health service delivery costs must be included as a parameter in defining how best to organize health service delivery systems to meet the needs of clients:

- o who enter drug treatment programs with multiple problems, including alcohol-related and mental health problems.
- o who contact other service delivery agencies such as alcoholism treatment programs and mental health centers.

These recommendations have been based on our work in the area and incorporate many of the suggestions and recommendations of TOPS review committees. Many of these recommendations reflect issues raised in discussions with treatment professionals in alcohol, drug, and mental health treatment programs, and with state and local decisionmakers. We have integrated our ideas and others into the following discussions of each area. These recommendations are presented as a basis for further discussion.

## Issues

An awareness and understanding of the diverse types of drug treatment clients and treatment processes are fundamental to increasing our knowledge of treatment outcomes, the client, and the program. Of importance, too, is the more general question of the persistence of treatment effects first identified in the recent followup analyses of Simpson and Sells (1982).

Client Typologies. Some important initial work has been done on client typologies by Sells and Simpson (1976) focusing on demographic and other client characteristics. We think another key approach is to classify clients according to drug use patterns.

Unlike the DARP clients, most clients now entering treatment present one of a variety of multiple substance abuse patterns. Anecdotal accounts from treatment personnel and analysis of the TOPS data indicate clients abusing multiple substances have more problems and a poorer treatment prognosis. We think that analyzing outcomes for users with various characteristics will generate important findings for clinical and research areas. The 7-category drug use pattern index developed for TOPS, for example, could be used for such classification.

Another method is to classify clients according to their problems. McLellan et al. (1980) have pioneered this effort with the Addiction Severity Index which was constructed for each individual based on clinical judgment. TOPS uses a similar measure of drug- and alcohol-related problems based on clients' attribution of problems to drug abuse. Further work on the objective and subjective severity of problems and their attribution to drug use needs to be conducted. The work of McLellan clearly shows that treatment outcomes differ for clients with different levels of severity. We think problem-based typologies should be one of the key methods of describing clients.

Treatment Process. The complexity of treatment is difficult to conceptualize and even harder to define and quantify. In TOPS, important advances have been made in assessing the many levels and components of treatment. Among the components to be studied are type of service or methods used and general indicators of treatment such as strength and integrity of treatment (Sechrest et al. 1979). However, the task of collating and linking components into a comprehensive description of treatment tied to treatment outcome remains.

Two key aspects of treatment process need to be explored. First, are services focused on the clients in need of particular services? Second, given limited treatment resources, is treatment (or are particular treatments) rendered to the clients who will benefit most from the service? The latter approach can be assessed in part from a cost-benefit or cost-effectiveness framework. We think that a careful assessment of the treatment process and individual components of this process can help greatly in developing a body of knowledge clarifying how treatment works to provide the practitioner with information on how treatment might be rendered most effectively and efficiently.

Persistence of Treatment Effects. It is generally acknowledged that treatment works well while clients remain in a program. The results of DARP, Phoenix House, and TOPS followups indicate that, while treatment efforts do persist, other factors become important after the client leaves treatment. The most recent analysis of the DARP data suggests that 5 years after a particular treatment, the effects of the treatment experience may be obscured by intervening events such as a subsequent treatment experience and normal maturation (Simpson et al. 1982).

The theoretical framework of Moos (1981) incorporates consideration of environmental influences following treatment that may supplant or override treatment effects.

A fruitful area of research traces the posttreatment behavior pattern of the client. What are the direct and indirect effects of treatment on long-term success? Do some treatment clients move, get jobs, or receive other community services immediately after leaving treatment that contribute to long-term success? Are these lifestyle changes a result, in part, of the treatment experience? To ascertain these effects we need analyses of data collected soon after treatment which are then linked with longer term followups. These studies should provide important information for the development of reentry and aftercare efforts.

### Analysis Approaches

Different approaches to the analysis of treatment outcome data have been developed. These include simple descriptive tables of survey data, detailed multivariate statistical analyses, and carefully controlled clinical trial designs. We think all approaches are essential, and more effort needs to be directed toward the integration and generalization of the findings derived from each of these approaches. We propose three fundamental efforts: development and presentation of clear, meaningful, and useful concepts and basic models; secondary analysis of existing data; and concentration on the replication and generalization of results.

Concepts and Models. We believe that clear, direct results which can readily be interpreted are essential to advancement of knowledge and improvement of treatment efficiency. The TOPS review panels, NIDA representatives, and State, local and individual program administrators have urged us to provide data that can be useful to them. They have consistently cited the monies spent on previous research and the limited utility of those studies to treatment programs for clinical, administrative, and other purposes. An additional objective or concern is the development of a research base that is useful to the research community and that will stimulate additional research. For this purpose, the clear specification of measures, composite variables, and models is paramount.

Clearly, the techniques for sophisticated multivariate searches for structure such as factor analysis, discriminant function analysis, and stepwise multiple regression are available. We, however, propose that these tools be used more as a method to test hypotheses and develop theoretical frameworks than to create statistically elaborate models which may lack a firm conceptual or theoretical base. Our analysis and model construction approach for TOPS emphasized, first, the creation of readily interpretable, conceptually sound measures and, second, the need to understand how these variables are related to other variables.

Only after these first steps are completed do we think it is efficient to proceed to basic model development. With the basic data and models, we can then begin to develop more sophisticated and elaborate models.

Secondary Data Analysis. A vast store of valuable data has been collected. We strongly recommend that data bases such as DARP, TOPS, therapeutic community followups, and individual program studies such as those for Phoenix House and the Philadelphia VA Medical Center be mined to their fullest extent.

Researchers should be encouraged to submit grants to conduct additional analysis for these data sets. For example, a program could be initiated for secondary analysis of these data, replications or expansion of the results from these studies, or additional data collection on supplementary samples of clients.

Such a program should emphasize how analyses of data from a particular study could complement other existing data bases. Most of the studies have numerous measures in common. For example, the TOPS questionnaires include all CODAP items, many DARP measures, and data that could be used to develop Addiction Severity Index scores. In the reports prepared by RTI, TOPS aggregate data are compared to DARP and CODAP results. The analyses conducted under this program could compare results from other data sets with findings from the CODAP, TOPS, and DARP data bases and vice versa.

Replication and Generalizability. The data now available for secondary analysis lead us to stress the need for replication of results. We have previously pointed out that DARP and TOPS cohorts of drug treatment clients differ in many ways. Treatment programs and systems evolve. Therefore, it is essential that findings be carefully replicated in different client populations, programs, and points in time to determine the limits to the generalizability of results of individual studies. We now have two general data bases, TOPS and DARP, that offer the opportunity for such replication and generalization. We think researchers should be encouraged to submit grants designed to replicate to the extent possible their results in the TOPS and DARP data bases. Research findings that can be replicated and generalized provide the firmest foundation for the orderly progress in the development of knowledge and the design of effective treatment.

#### Need for Additional Data Collection

Data collection of sufficient scope to effect research advances and practical improvements in treatment are costly in terms of time, money, and effort. Therefore, any future data collection efforts should be carefully considered in terms of their potential utility. We think that the three types of data collection efforts discussed below deserve such careful consideration.

Long-Term Followup Studies. The long-term followup studies such as those initiated in the DARP research should be continued and others encouraged. They provide important information on the development and maturation of addicts and drug abusers. Five- and 10-year followup studies could be conducted with carefully selected samples from existing data sets. In a long term followup study, the focus should be more on a natural history of addict careers rather than on the impact of a particular treatment episode. In the followup studies, the focus should be on issues such as episodic and persisting changes in behavior, the history of treatment since the initial treatment episode, and the changes in the relationships among various conditions, treatments and behaviors, and mental health and psychological status.

Multipurpose Treatment-Based Research Program. The past, current, and potential utilization of the DARP and TOPS data bases, and to a more limited extent CODAP, shows that a treatment-based research program can serve a variety of purposes for NIDA researchers and the drug treatment community. Unfortunately, for the first time in the past 15 years, no such data base exists. We have fragmented information on what has happened in treatment since 1981 and what kinds of clients are entering treatment. The reestablishment of a treatment data base can:

- o provide updated descriptions of drug abuse patterns and service needs of clients seeking drug abuse treatment,
- o identify administrative and treatment-related changes in the treatment system and individual program organizations, services rendered, and effects on client outcomes,
- o continue the important aspects of the CODAP epidemiological data base and augment the National Drug Abuse Treatment Utilization Survey (NDATUS) treatment management information system,
- o provide samples for followup, and
- o develop information about treatment/clinical and administrative/ management issues for knowledge transfer to State and local agencies.

More specifically, four major needs that a treatment-based research such as TOPS or DARP can fulfill are:

- o monitor changes in the population of drug abusers seeking entry to drug abuse treatment,
- o develop in-depth information on the nature and extent of treatment received, especially under the block grant funding mechanism,
- o collect followup data after treatment termination, and
- o provide a population base for clinical trials, individual program studies, special studies, or special issues analyses.



Linkage with Clinical Trials, Special Studies, and Program-Based Studies. The need for more generalizable research findings can be fulfilled by linking various types of data collection efforts with similar instruments and samples. During TOPS, a number of programs, researchers, and doctoral students supplemented the TOPS data collection with special studies and used TOPS data for secondary data analysis. TOPS data collection forms were used by Daytop in their mini-university followup and in a community mental health center study of appropriate diagnoses of drug use by physicians and mental health practitioners. The emphasis on linkages would promote assessment of how individual study results can be integrated into the existing body of knowledge.

#### Studies of the Drug Treatment System Organization

Perhaps the major change which has taken place in drug abuse, alcohol, and mental health treatment systems recently has been the switch to State-directed block grant funding. Clearly, there is a need to develop knowledge about the types of organizations and treatment services which may be efficient and effective under this system. It is likely that in many States and localities at least some drug abuse treatment services will become more closely associated with alcohol and mental health services, and it is important to assess the outcome of these changes from a clinical or treatment effectiveness point of view, particularly for clients with multiple problems.

#### FOOTNOTE

<sup>1</sup>It should be noted that TOPS defines termination as the last physical contact with the OPDF program for counseling. Official records used for reporting to NIDA's Client Oriented Data Acquisition Process (CODAP) management information system could show a discharge date up to 30 days after the last contact. Therefore, compared to CODAP, TOPS data would indicate shorter retention.

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# Program-Based Evaluation Research in Therapeutic Communities

George De Leon, Ph.D.

There are four major treatment modalities addressing the problem of substance abuse: detoxification, methadone maintenance, drug-free outpatient settings, and therapeutic communities (TCs). Each modality has its view of drug abuse; each impacts the abuser in different ways; and the effectiveness of each must be evaluated in terms of its own principal aims.

The primary aims of therapeutic communities are to achieve the following: a global change in lifestyle reflecting abstinence from illicit substances, elimination of antisocial activity, increased employability, and prosocial attitudes and values. A critical assumption in TCs is that stable recovery depends upon a successful integration of these social and psychological goals. The rehabilitative approach, therefore, requires multi-dimensional influences and training that, for most clients, can occur after an extended period of living in a 24-hour residential setting.

The effectiveness of therapeutic communities has been evaluated primarily through followup studies. Many of these have been executed by investigating teams engaged in large scale modality comparisons that include therapeutic communities. Others have been conducted on and by individual TCs. This chapter selectively reviews these program-based studies to assess the effectiveness of the TC. The emphasis of this research has been on treatment outcome, although there has been some investigation of retention and treatment process. Illustrative findings and conclusions from these studies are summarized briefly.

The literature is not surveyed exhaustively, nor is it reviewed critically. Three criteria guided the selection of research to be reviewed. First, studies involved therapeutic communities whose planned duration of treatment exceeded 12 months in residency. Studies of hospital-based and shorter term TCs were excluded on the assumption that these constituted departures from the traditional TC model either in treatment goals or in the procedures. Although evaluation of these modified TCs is important, their findings would not fairly reflect the effectiveness of the traditional approach. Second, the studies were conducted by research teams that were affiliated

with, or based in, therapeutic community settings. Third, the studies have been published, were in press, or were technical reports of completed projects. Finally, findings from externally based research (multimodality) are also cited to highlight corroboration or disagreement with the conclusions drawn from the program-based evaluations.

## TREATMENT OUTCOME

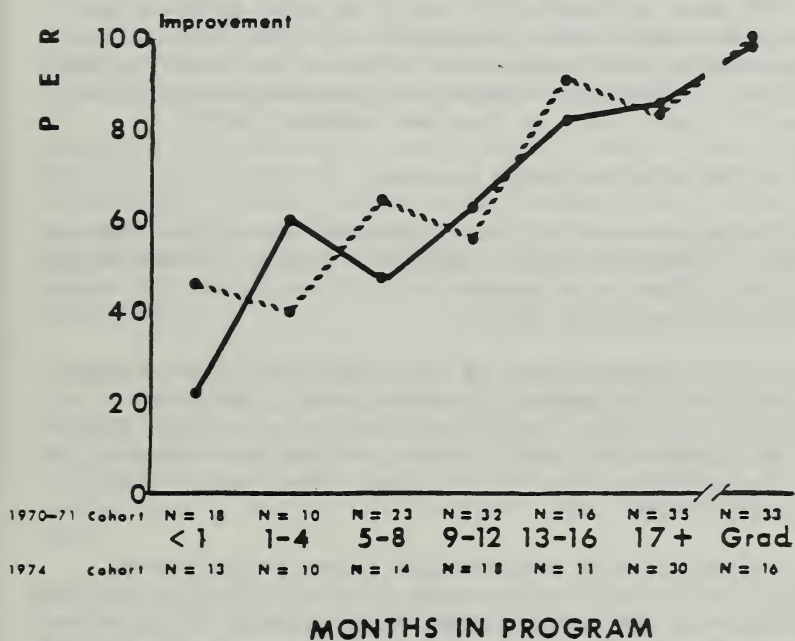
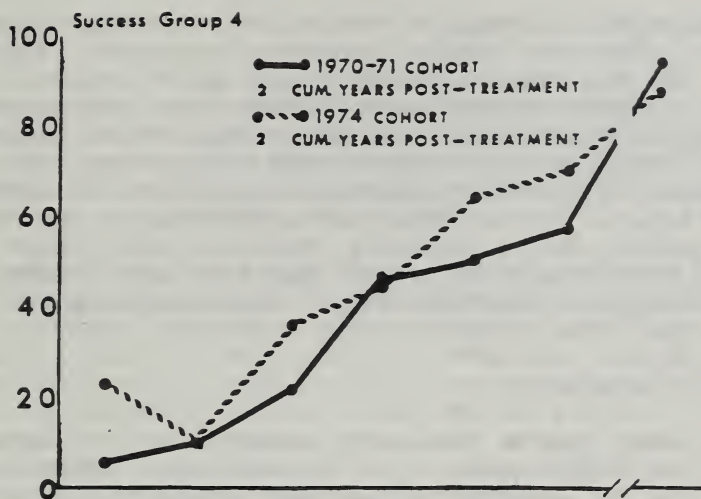
The program-based followup studies surveyed varied with respect to sample size, length of followup period, number of variables observed and complexity of data analysis. However, all observed at least one of three separate outcome variables: illicit drug use; criminality and unemployment; and several constructed composite measures of individual social adjustment (success or favorable outcome status). Most of the studies utilized self-report which was considered reliable, although several also contain corroborating information from outside agencies.

### Separate Outcome Variables

All of the studies revealed that immediate and long-term outcome status of the clients followed improved significantly over pretreatment status. Drug use and criminality declined while measures of prosocial behavior (employment and/or school involvement) increased (Aron et al. 1976; Barr and Antes 1981; Brook and Whitehead 1980; De Leon 1984; De Leon et al. 1979; Holland 1978, 1983; Pin et al. 1976; Pompei et al. 1979; Romond et al. 1975; Wilson 1978; Wilson and Mandelbrote 1978). Studies which examined differences between clients who complete (graduate) and those who drop out of treatment indicated that the graduates were significantly better than dropouts on all measures of outcome. The investigations that analyzed time-in-program reported a positive relationship between favorable outcome and length of stay in treatment among dropouts (Barr and Antes 1981; Coombs 1981; De Leon 1984; De Leon et al. 1979; Holland 1978, 1982; Wilson and Mandelbrote 1978). None of the recent studies yielded contrary results, although the magnitude of the changes varied, and several with positive findings failed to obtain time-in-program differences (Brook and Whitehead 1980).

### Success Rates

A few studies utilized a composite index of outcome, based upon self-reported employment, opiate use or primary drug use, and criminal activity. In these studies, maximally or moderately favorable outcome occurs in approximately half of the clients followed (De Leon 1984). Figure 1 illustrates the stability of therapeutic community success rates in relation to length of stay. Two cohorts of male opioid abusers, drawn from different admissions populations, were compared at followup. Success rates by time-in-program for both cohorts were virtually indistinguishable, ranging from zero percent for those who remained under one month to approximately 50 percent among dropouts beyond a year in treatment (De Leon et al. 1982).



1970-71 Cohort	N = 18	N = 10	N = 23	N = 32	N = 16	N = 35	N = 33
	< 1	1-4	5-8	9-12	13-16	17+	Grad
1974 Cohort	N = 13	N = 10	N = 14	N = 18	N = 11	N = 30	N = 16

**FIGURE I**  
Success & Improvement Rates

Comparisons between the 1970-71 and 1974 cohorts through 2 years of followup for male opioid abusers. Success (group 4) and improvement rates by time-in-program (TIP) are shown by the 1974 TIP classifications. There are no significant cohort differences at any point on the curve, revealing a striking replication of the time-in-program function.

These social adjustment findings have been obtained in large-scale multimodality efforts that included therapeutic communities. For example, in the Drug Abuse Reporting Program (DARP) samples of therapeutic community dropouts and completed clients, the direction and magnitude of results obtained on outcome variables and composite indices vary little from those obtained in the program-based evaluations. Moreover, the DARP studies also substantiated the significant relationship between time-in-program and outcome (Simpson and Sells 1982). In general, other multimodality evaluations report similar findings for the traditional TCs studied (Bale et al. 1980; Sheffet et al. 1980), although one investigation didn't obtain length-of-stay differences (Burt et al. 1979).

### Psychological Adjustment

Although a primary goal of therapeutic communities is psychological adjustment, this domain appears in few outcome studies (Brook and Whitehead 1980; De Leon 1984; De Leon and Jainchill 1981; Kennard and Wilson 1979). In these, psychological scores or profiles significantly improved at followup—a finding obtained in all of the investigations reviewed, including those outside of the U.S.A. The Phoenix House studies have demonstrated a direct correlation between social adjustment (success rate) and psychological adjustment at two-year followup (De Leon 1984; De Leon and Jainchill 1981).

### Factors Associated with Successful Outcome

Does success or improvement relate to treatment or to client factors? This question still requires research answers. Added to these factors are the apparent influences of maturation and intercurrent life events upon long-term, posttreatment status.

Only a few studies, program-based or otherwise, have systematically examined factors that are associated with successful outcome. Primarily, these studies have focused upon predicting outcome status from client and background characteristics, pretreatment variables, and treatments after discharge from TCs (De Leon 1984; Holland 1978; Simpson and Sells 1982).

Significant correlations have been obtained between demography, primary drug, and successful outcome; although these findings were not stable and tended to vary across studies. For example, in the Phoenix research, females and opioid abusers showed higher success rates, and females revealed significantly better psychological adjustment than did males at followup (De Leon and Jainchill 1981). Although the difference in psychological outcome by sex was impressive, it remains to be replicated in other programs.

Regression studies have identified several predictors of the separate outcome measures, e.g., lifetime criminality, pretreatment educational level, opioid drug use, and reentry into treatment within the first post-discharge year (De Leon 1983a; Simpson and Sells 1982). Though significant, these associations were small when compared with the effects of time in program. Moreover, they failed to predict

successful status when measured with the composite index (De Leon 1983b).

Finally, program-based studies have assessed nontreatment hypotheses in explaining positive outcome. In these, behavioral cycle, statistical regression, social climate factors, maturation, and other influences have been rejected as valid alternatives to treatment effectiveness (De Leon et al. 1982; De Leon 1984; Holland 1984).

In summary, the findings from the program-based followup research provide convincing evidence for the effectiveness of the TC approach for drug abuse. Significant improvements occurred on the separate outcome measures of social adjustment (drug use, criminality, and employment), and on composite indices for measuring individual status. With few exceptions, followup studies reported a positive relationship between time-in-program and posttreatment outcome status. Generally, these findings were obtained in larger scale, externally based followup studies that included therapeutic communities.

In the few program-based studies that investigated psychological outcome, results uniformly showed significant improvement at followup. Recent Phoenix House studies have demonstrated a direct relationship between success status and psychological adjustment at followup.

Univariate and multivariate investigations revealed relatively few significant predictors of successful outcome other than length of stay in treatment. Finally, several program-based studies have advanced persuasive arguments and data that reject various nontreatment hypotheses offered as alternatives to treatment effectiveness.

## RETENTION

The most consistent predictor of successful outcome has been length of stay in treatment. This finding stresses the importance of understanding retention as a phenomenon in its own right. Notwithstanding the importance of this issue, research has not systematically investigated the three main retention questions: What are the retention rates? Who are the dropouts? And, why do they leave treatment?

Reviews of retention studies have been published (Baekland and Lundwall 1975; Brook and Whitehead 1980; Cole et al. 1981). The main findings and conclusions from the few program-based investigations on retention can be summarized briefly.

### Correlates of Retention

Most of the dropout studies, program-based or otherwise, have focused upon client characteristics and selected pretreatment variables that correlate with retention. In these studies, typical client profiles in relation to retention have not been delineated. While some variables have consistently correlated with length of stay, their predictive power has not been corroborated in replicational study designs.

The variables studied in relation to retention may be grouped into several categories which assess demography, client background characteristics, or client status prior to entry into treatment: (1) Demography and primary drug: these variables have not consistently related to retention, although Hispanics and non-opioid abusers have revealed significantly shorter length of stay (De Leon 1983a); (2) Previous treatment history: the number and type of previous treatment experiences have not related to retention in TCs, although a few studies report somewhat longer retention in those with more previous treatment admissions. Specifically, among readmissions to the same programs, the number of days before initial dropout has been found to be a significant predictor of long-term retention in subsequent admissions (De Leon 1983b; De Leon and Schwartz 1984); (3) Background (lifetime characteristics): family background, criminal history and social relations generally have not related to retention in treatment, although those with longer and more severe lifetime criminal histories reveal shorter durations of stay in therapeutic communities (De Leon 1983a); (4) Current status (pretreatment): variables describing the client's status in the days or months prior to entry into treatment generally do not relate to retention. However, younger clients with legal pressure, admissions with prior attempts at ceasing drug use, clients who are less defensive about their problems, or those who desire to change their deviancy remain somewhat longer in TCs (De Leon 1983a; Holland 1982); and (5) Psychological adjustment: several investigations indicate that early dropouts reveal higher levels of psychological dysfunction measured with standard paper and pencil instruments (Sacks and Levy 1979; Wexler and De Leon 1977). Although significant, the magnitude of the correlations between psychological scores at admission and length of stay is moderate, indicating their relatively low predictive power. One impressive finding, however, obtained in a recent investigation involving a consortium of therapeutic communities, revealed a striking relationship between psychological change during treatment and overall retention. Individuals who improved psychologically within the first several months after admission showed a significantly greater likelihood of continuing their stay in treatment (De Leon 1980). This finding has obvious implications for clarifying the relationship between client progress and retention.

## Retention Rates

Retention rates in therapeutic communities have received some attention in the program-based literature (Brook and Whitehead 1980; De Leon and Schwartz 1984; Glaser 1974; Sansone 1980). Generally, these studies agree in revealing a rather high dropout rate in therapeutic communities, although interpretation of these rate studies is clouded by the method of analyzing and reporting retention data. For example, a summary statistic is usually provided of either the percentage of those who failed to complete treatment or 12 month retention rates. These single values ignore differences in residential programs such as planned treatment duration. The units of analysis vary (days, weeks, months, quarters) as do the methods of calculating rates (i.e., based upon all admissions, dropouts, surviving admissions).



Moreover, the temporal pattern, or critical points of dropout, have not been well described.

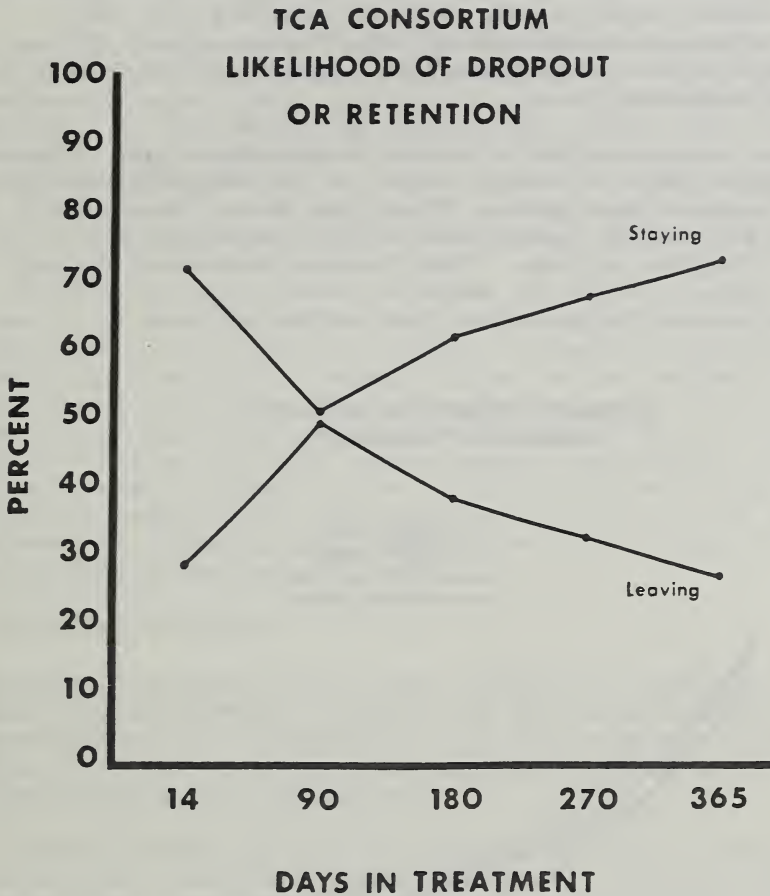


FIGURE 2  
Likelihood of Retention

Several of these difficulties have been overcome in a recently completed, program-based, research project in which retention rates and the temporal pattern of dropout were compared among drug-free residential programs in several data sets (De Leon and Schwartz 1984). The main results show: (a) across seven traditional therapeutic community programs, the 12-month retention rate ranged from 9% to 15%; and (b) based upon rates adjusted for those who left treatment ("survivor rates"), estimates indicated that the likelihood of continued retention increased significantly with longer stay in treatment. Figure 2 shows, for example, that almost 70 percent of clients remaining in treatment 180 days continue through 9 months' residency.

Analysis of other data sets revealed that attrition is the rule in all drug treatment modalities. For example, among 1979 admissions to all federally funded treatment programs in the CODAP system, 12-month

retention rates averaged 22% in methadone maintenance, 9% in drug-free ambulatory programs, and 7% in drug-free residential programs (De Leon and Schwartz 1984). Yearly analyses have reliably documented a decline in annual retention rates across all modalities from 1964 through 1980 (Bayer and Koenigsberg 1981; Simpson and Joe 1976). Some recent evidence, however, suggests a reversal of this trend in a number of traditional TCs.

Finally, the temporal pattern of dropout is remarkably stable. Figure 3, for example, presents retention curves for the residential drug-free modality in several data systems. Though not shown, this pattern of dropout is the same for nonresidential settings, methadone, and outpatient drug-free programs. While the absolute levels of dropout may vary (higher retention for methadone maintenance), the shape of the retention curve is the same as that depicted in Figure 3.

### RETENTION CURVES FOR DRUG-FREE RESIDENTIAL PROGRAMS

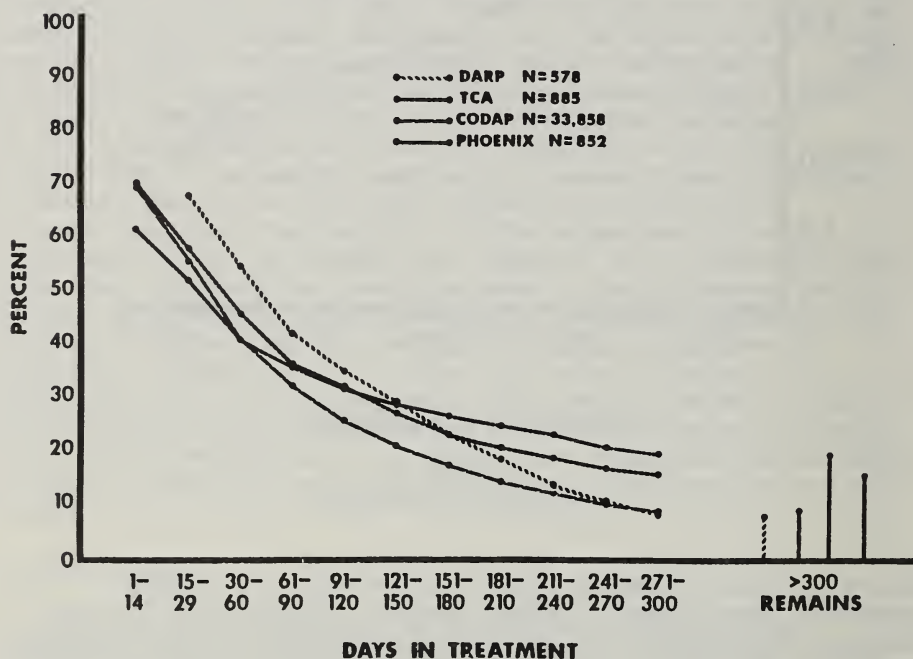


FIGURE 3

Retention in Several Data Systems (DARP admissions, 1969-71; TCA, 1979; CODAP, 1979; Phoenix House, 1979)

### Reasons for Dropout

Why clients drop out of treatment is a question that has not been investigated adequately, although several research teams are currently exploring this aspect of retention (De Leon 1983a). Hypotheses concerning client reasons for dropout have been offered mainly from

clinical impressions, with some preliminary research, and remain to be empirically tested (Baekland and Lundwall 1975; De Leon 1980; De Leon and Rosenthal 1979; Heit and Pompei 1977; Sansone 1980).

In summary, program-based research on retention reveals only sporadic and weak correlates of dropout with demographic factors, primary drug, background characteristics, pretreatment status, and psychological adjustment. No client profile has emerged that predicts length of stay in treatment. This conclusion is confirmed in multimodality investigations of client predictors of dropouts (Burt et al. 1979; Sheffet et al. 1980; Simpson and Joe 1976). For example, the DARP studies conclude that patient characteristics are not strong predictors of retention in any treatment modality (Joe 1976).

Research on some quantitative aspects of retention, however, has yielded lawful and predictable patterns of retention in long-term therapeutic communities. Dropout is highest within the first 15 days of admission and declines sharply thereafter in such a way that the likelihood of dropout decreases with length of stay itself. Although overall retention rates differ across programs and modalities, the shape of their retention remains uniform. Thus, attrition is the rule in drug treatments, substantiating the observation that retention is a lawful phenomenon. Finally, little is known of the client's reasons for leaving or remaining in treatment.

## TREATMENT PROCESS

Treatment process has been the least investigated problem in drug abuse treatment research. Ironically, the first process studies in TCs appeared more than a decade ago, but their importance receded in favor of the need to establish firm information concerning treatment effectiveness and cost effectiveness.

To facilitate review, the relatively few process related studies in the literature were classified into three categories: studies of treatment change, direct investigations of treatment process elements, and client attribution of treatment influences. A departure from the previous sections is that published studies in the last 12 years were included along with data from several unpublished efforts.

### Treatment Change

These studies examined psychological measures of client change during their stay in programs without assessment of treatment components. They are reviewed as process studies since many of the psychological scores measured change as reflecting program goals, e.g., attitudes, ego strength, emotional control, responsibility, self-esteem, etc. Together with behavioral changes in drug use and antisocial behavior, psychological change during residency strengthens inferences concerning the specific influences of treatment elements.

The program-based studies employed standardized psychological inventories such as the Minnesota Multiphasic Personality Inventory (MMPI), the Tennessee Self Concept (TSC), as well as specific scales assessing I.Q., moods, or psychological symptoms. The studies vary

with respect to design, number of variables measured, and the number of observations during the treatment (Brook and Whitehead 1980; De Leon 1974, 1976, 1980, 1984; De Leon et al. 1971, 1973, 1984; Kennard and Wilson 1979; Sacks and Levy 1979; Zuckerman et al. 1975).

The results are quite uniform in showing significant improvement on most psychological scales during treatment. Most apparent is the fact that the entry profile or pattern of psychological scores is also similar across programs and even cultures. For example, the signs of character disorder, personality inadequacy, mood disorder, poor self-esteem and dull-normal intellectual level are prominent. At second testing, overall psychological status improves significantly across most measures but generally does not attain normative or healthy levels. Larger improvements occur in self-esteem, ego strength, socialization, and depression. Relatively small changes occur in the more enduring personality features, e.g., the character disorder elements. Thus, drug abusers in the TC show significant improvement in most psychological domains, although long-standing character traits are more resistant to change.

Several studies contained multiple measurement points of psychological change during treatment and at followup (Brook and Whitehead 1980; De Leon 1984). The results are fairly uniform in showing that psychological improvement posttreatment generally exceeded the gains made during treatment, although one study obtained no further gains at four year followup beyond those obtained in the first posttreatment year (Brook and Whitehead 1980).

The studies completed at Phoenix House further correlated social adjustment (success status) with psychological improvement during treatment and at followup. Clients with an unfavorable success index at followup showed little psychological change during treatment or at followup. In contrast, clients who obtained a favorable success index revealed significant psychological improvement during treatment and continued psychological gains at followup. This important finding offered indirect, but positive, evidence for the influence of treatment factors in the change process (De Leon 1984).

#### Studies of Process Elements

These studies addressed the relationship between specific treatment elements and client change during residential treatment. Two early studies at Phoenix House evaluated the immediate effects of the encounter group experience upon emotional and physiological changes in group participants. When compared with baseline measures, results showed significant reductions in self-rated emotionality (depression, hostility, anxiety) and in physiological "upset" (systolic blood pressure) immediately following participation in encounter therapy sessions (Biase and De Leon 1969; De Leon and Biase 1975).

Research in progress at Daytop Village therapeutic community has experimentally evaluated the effects of a specific educational intervention (college credit courses) upon clients in a therapeutic community during the primary treatment stage of their residency.

Eligible clients were matched on a number of variables and were randomly assigned to one group, those who received college courses in addition to their usual treatment, or to a second group, those who only received the usual TC treatment. Significant longitudinal changes in self-concept occurred for both groups, but gains were larger in the college clients. These findings support the TC assumptions concerning process and role changes. The student role significantly enhanced self-esteem over that expected from treatment effects alone in the TC (Biase 1981).

The design of the above studies evaluated clients under various controlled or comparative conditions (e.g., no college, discussion groups, work activities). This design strengthens conclusions concerning the effects of the specific treatment interventions (e.g., encounter group or college). Thus, though limited, these investigations affirm the feasibility of studying treatment process with acceptable methodology.

Treatment process has also been examined in several program-based studies which measured client and staff perception of the therapeutic community environmental elements, using an instrument based upon empirically derived dimensions which assess aspects of social and health environments such as prisons, hospitals, and community oriented programs. The respondents completed two forms of the instrument, expressing their opinions concerning the actual state of the environment and the way the respondent would like to see the environment if it were the best possible treatment program.

Despite the preliminary investigative status of this area, the research has provided a considerable amount of information from several programs, with apparent consistent results. First, all TC programs in the research revealed environmental profiles that were similar and positive compared with profiles obtained from prisons and hospitals. Thus, the assumption that common philosophy and practices underlie the traditional TCs, which generate a unique treatment environment, is not contradicted by the staff's and residents' perceptual data provided in the studies. Second, client perceptions of the environment were in accord with expectations concerning the treatment process associated with length of stay (De Leon et al. 1980).

#### Attribution

These studies have investigated client perceptions of their experiences in TCs (Browne 1980; Simpson and Lloyd 1979; Wexler and De Leon 1983; Winick 1980). Generally, on measures of satisfaction, clients reported a favorable experience in the therapeutic community and would recommend their particular residential program to others. Other analyses have yielded findings clarifying the specific relationship between program components and client status during and after treatment. One study of in-treatment change obtained a positive association between time-in-program, client insight, and participation in encounter groups (Browne 1980).

A large scale, program-based study assessed the relationship between clients' status at followup and their retrospective perceptions of the

treatment experience (Wexler and De Leon 1983). Successful status and length of stay in treatment were directly related to client ratings of their satisfaction with treatment, the relevance of specific program components to their status, and their weighting of the relative importance of treatment and nontreatment influences upon their lifestyles since leaving Phoenix House. Although clear, these findings must be interpreted cautiously, given their retrospective nature. Possible halo effects, or dissonance factors, might have influenced client perception of treatment experience and their own followup status. Nevertheless, the results firmly support hypotheses concerning the relationships between treatment experience, treatment elements, and outcome status.

In summary, there is relatively little published research on the treatment process in therapeutic communities. The small program-based literature has, for the most part, indirectly examined process through longitudinal studies of treatment change, and clients' retrospective perceptions of their treatment experience. Only a handful of studies directly investigated the relationship between program components and client change.

In general, the findings from all these studies support inferences concerning the process of client change, although the process itself remains to be studied directly. This conclusion is not contradicted by the findings of the few multimodality studies which contain measures of clients' perceptions of the treatment experience.

#### SOME IMPLICATIONS FOR FUTURE RESEARCH

The treatment research reviewed, both program and externally based, appears to have converged upon several conclusions, issues of interpretation, and implications for future research directions. These are discussed in relation to the three main areas of inquiry reviewed.

##### Treatment Outcome

A substantial followup literature indicates that drug treatments are effective when evaluated in terms of their principal aims. Program-based followup studies, for example, have firmly established the effectiveness of the TC approach in terms of its principal aim of modifying both social and psychological adjustment.

Nevertheless, conclusions concerning treatment effectiveness remain tentative in light of familiar methodological considerations, the most serious of which is the lack of control groups. The followup samples studied may be self-selected to seek, remain in and benefit from the TC; or, perhaps, to improve without any treatment. Thus far, however, solutions to these selection problems have eluded research design strategies. Assembling untreated matched controls or comparative treatment groups through random assignment has not been feasible. There are ethical problems in withholding treatment; and random assignment to modalities has resulted in high and differential attrition rates, presumably arising from client-treatment mismatch. (As

noted below, however, random assignment within treatment programs can be implemented).

These difficulties stress the need for a revised perspective on the interpretation of treatment outcome research that would reflect the multivariate complexity of individual change. One such perspective has been outlined for therapeutic communities in other writings (De Leon et al. 1982). Briefly, successful outcome emerges from an interaction of client, treatment, and nontreatment influences. The specific impact of the treatment experience is most apparent during and immediately following residency; thereafter, though less recognizable, treatment effects may integrate with (or perhaps alter) the contribution of other experiences in maintaining successful status.

This perspective emphasizes several assumptions that are relevant for the design of outcome studies. First, drug abusers can be classified according to differences actually observed in relation to their treatment involvement. This suggests that the universe of drug abusers can be quadrisected by definition: Those who come to treatment and those who do not, and within each, those who make positive changes and those who do not.

The differential outcomes among the four groups reflect each group's unique membership. For example, those untreated drug abusers who mature out of their addiction lifestyle are simply different people from those who enter treatment and change. This assumption avoids the dead end criticism of the no-treatment control since the four groups do not serve as controls for each other, although they can be usefully compared.

Second, among those who enter treatment, change reflects an interaction between the individual and the treatment. This implies a mutual, bidirectional exchange between the person and the treatment environment. Thus, treatment influences, as unique measurable events, are not readily extractable. Furthermore, the treatment experience itself is an episode, one of many experiences in the individual's continually changing status. Thus, "proving" a treatment influence is less relevant than identifying its contribution to a continuing process of individual change.

From this perspective, treatment effectiveness should be assessed for those clients who seek, or perhaps remain in, treatment settings. Comparisons among the clients in the other quadrants, however, could reveal much about individual differences and the many influences that contribute to the change process.

Finally, the primary source of information about this process is the client's own view of the relevant influences. External corroboration of client change through records or other evidence validates the fact of change, but does not reveal the reason for change. In the last analysis, it is the client who evaluates the relevant influences in his or her life.

## Retention

Dropout is the rule across all drug treatment modalities. The program-based retention findings reviewed contain several implications for directing research on this problem. First, although factors have been shown to correlate with retention, the consistency and magnitude of their predictive power has been relatively low. This finding was substantiated in the externally based studies of the number of programs, modalities, or variables surveyed.

The fact that retention is difficult to predict from client characteristics suggests that the populations studied (drug abusers seeking treatment) are, not unexpectedly, more similar than different. Hence, measures of their characteristics tend to show relatively low variability, evident in the generally small to moderate multiple correlations obtained in regression analyses predicting time in program.

Nevertheless, even those who seek treatment could be diverse in ways that have not yet been fully explored. These presumed differences reflect not who clients are, in terms of fixed background characteristics, but how they perceive themselves, their circumstances, and their life options at the time of treatment contact.

Assessment of these differences could focus upon at least four domains of client perception variables which alone, or in combination, affect dropout:

- (1) Motivation (intrinsic pressures): This refers to the severity of the problem and the need for personal change;
- (2) Circumstances (extrinsic pressures): These refer to influences from family, personal relationships, health and legal conditions, employment, educational, and fiscal matters;
- (3) Readiness: This refers to the perceived need for any treatment to assist in personal change, compared with alternative options such as self-change or other offerings; and
- (4) Suitability: This refers to the client's understanding and acceptance of particular treatment approaches.

The specific variables within each domain remain to be elaborated, and their relevance to the orderly retention curve must be investigated empirically.

Second, the pattern of retention is lawful and quantitatively predictable, but the phenomenon itself remains to be explained. Not unlike the perspective on outcome, however, retention can be viewed as a complex interaction of client diversity and treatment influences. Shifts in the relative contribution of each component may be reflected in the different segments of the retention curve. Within this interactional context, however, a constant proportion of dropout is



expected when homogeneous procedures (e.g., treatment) are imposed upon a diversity of clients.

Nevertheless, the stable temporal characteristics of retention can be utilized by researchers and program managers in several ways. For example, these permit analyses of factors that may alter expected dropout rates. The critical points of termination are particularly relevant for treatment planning and for enhancing retention. Finally, the relatively invariant temporal pattern provides a reliable dependent variable in evaluating efforts to reduce dropout.

### Treatment Process and Program-Based Research

The importance of treatment process studies is evident to most investigators. To a large extent, the conclusions concerning treatment retention and effectiveness highlight the need to clarify the treatment process. Although impressive, the relationship between length of stay and treatment outcome only indirectly implies the influence of treatment elements upon client status. Process studies can render explicit the correlation between actual events in treatment and change in client status. It is this interplay between treatment elements and client change which defines process.

The study of drug treatment can best be advanced by a complementarity between externally- and program-based research efforts. Much has been learned from program-based research as to the implementation of studies in treatment settings (see, for example, De Leon 1979, 1980). An important lesson from these efforts is that treatment process is perhaps the one investigative area that is uniquely suitable for program-based or affiliated research teams. This is evident in the following points.

First, as noted earlier, some of the treatment process studies of therapeutic communities employed rather rigorous research designs involving control conditions or random assignment procedures. The implementation of these designs is possible only in treatment settings that involve the complete cooperation of staff and clients. The likelihood of obtaining this cooperation of staff and clients is greater with program-based research personnel.

Second, the successful completion of process studies will vary directly with the degree to which programs view their utility. Clinical and management personnel appreciate outcome studies since these are relevant to issues of funding, program marketability, and staff morale. Moreover, these studies exert relatively little demand on program activities. Treatment process research, however, imposes heavy strains upon program activities, and it is understandably resisted by staff unless they can see its benefits. Thus, acceptance and utilization of treatment process research is more likely to be facilitated by program-based research teams who serve in educative roles.

More generally, treatment process studies should be designed to solve problems rather than test theories. Human services programs experience practical, everyday problems concerning staff turnover and

training, client dropout, and inconsistent treatment outcomes. Thus, treatment process studies present the strongest challenge to researchers, program-based or otherwise, to provide relevant answers for pressing clinical and administrative questions.

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# Clinical Trials in Drug Treatment: Methodology

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The most common form of clinical trial is the between-group comparison study. Subjects are randomly assigned to one or more innovative treatment conditions or to a control condition. Variants of between-group designs are the most powerful tools available for determining the effects of treatment. An optimally designed, between-group, clinical trial can control for time in treatment, therapist attention and qualifications, client and therapist expectations, and client characteristics. Multiple examples of this design are in the drug treatment literature (for example, Hall et al. 1981a, 1981b; Stanton et al. 1980).

The within-subject design is less common. Here, different treatment conditions are sequentially presented to the same subject or to a small group of subjects. Comparisons are then made across different treatment conditions for the same subject(s). The best example of the within-subject design in drug treatment is the systematic work of Stitzer and her colleagues on contingency contracting (Stitzer et al. 1980).

No matter which design is used, two groups of factors are important in evaluating a controlled trial: Experimental design and treatment design.

## EXPERIMENTAL DESIGN

Experimental design includes factors which are central in determining the internal validity of the study. Internal validity refers to the degree to which the results of a study can be interpreted unambiguously (Campbell and Stanley 1963).

Design survival is a necessary, but not sufficient, criterion for a controlled trial's usefulness. This term refers to whether the treatment design survived the study so that the outcome can be interpreted as an experiment. A second factor is outcome measurement. Since drug abuse affects many aspects of a client's life, multifocal measures are usually preferable to single-focus measures. As in any research endeavor, measures should be reliable and valid.

The issue in evaluating sample size is usually whether the experiment includes enough subjects to detect significant differences in the population. Occasionally, however, the rationale for unusually large sample sizes is not clear. Attrition is related to sample size; high attrition rates can reduce an originally acceptable sample size to a final sample that is too small to detect differences. It can also result in inadvertently testing only the most highly motivated subjects. Differential attrition can produce treatment conditions which become confounded on crucial variables. Finally, in the ideal experimental design, nonspecific factors can be ruled out, and any outcomes can be attributed to the specific aspects of the treatment. That is, differences between conditions cannot be attributed simply to different amounts of time in treatment, or different amounts of attention from therapists. Similarly, treatments can be presented so that client expectations of success differ. This can occur independently of actual treatment efficacy. Expectations of success and actual success are probably related; thus, in the ideal designs, subjects in all conditions enter treatment with identical expectations of success.

## TREATMENT DESIGN

Treatment design refers to the adequacy of the experiment as a test of a particular treatment; that is, whether the findings can be generalized and applied to actual clinical practice.

Credibility and representativeness of change agents are part of treatment design. For example, a psychiatrist and a drug counselor are perceived differently as health providers. While it is difficult to say which class of provider is most effective (LoScuito et al. 1979), clear cut differences between them may well confound provider differences with treatment differences. Also, atypical change agents may produce non-replicable findings, and subject representativeness must be a factor when considering the treatment population for which results can be generalized. This is particularly crucial in drug treatment, since client characteristics vary widely across and within modalities. Both the number and representativeness of different settings must also be considered in generalizing results. Studies replicated in multiple facilities are less likely to be confounded by characteristics unique to a single facility than studies completed in one facility.

Some followup is usually necessary for results to be clinically useful. The standard length for followups is 6-12 months, since relapse usually happens immediately after treatment termination (Hunt et al. 1971). Protocol adherence is another aspect of treatment design; treatments can change subtly as therapists gain experience or lose enthusiasm. Therefore, studies which use a treatment manual or some other method of formally standardizing treatment are more likely to produce treatments which are consistent over time. Thus, what is being evaluated is clearer.

Factors in this review were addressed only if they affected the interpretation of the study.

## STRATEGY AND CLINICAL TRIALS

The value of a clinical trial rests not only on its individual characteristics, but also on the research strategy in which it is embedded. Three strategies have been used in evaluating drug treatments: single trials; multiple-site, partial replications; and series of partial replications.

### Single Trials

Most controlled studies are single trials completed in isolation from other research. An example is the large-scale, family therapy trial completed by Stanton et al. (1980). The advantages of single trials center around the great degree of possible control; because single trials are executed by a single investigator or investigative team on one subject sample, confounding variables can be tightly controlled or eliminated. Also, the protocol can be explicitly developed. On the other hand, single trials have no built-in replication mechanism, as do the other research strategies. Single trials do not provide estimates of the parameters of conditions under which a particular treatment is effective. Further, they do not allow convergent validation; that is, they do not indicate whether conceptually similar therapies applied in slightly different ways produce a given result. Single trials are potentially the most dangerous in terms of risk/benefit ratios; there is always the risk that, despite considerable effort, a controlled trial will collapse and fail to yield useful information.

### Multiple Site, Partial Replications

In partial replications at different sites, studies are completed at more than one site by different investigative teams. This category does not include studies completed at different treatment facilities by the same team, where the goal is to use exactly the same procedures at each facility. In that case, treatment facility is simply an independent variable in a single trial. For partial replications at multiple sites, independent and dependent variables may be drawn from the same universe but need not be used in exactly the same fashion. This strategy gives a broad picture of the efficacy of a particular intervention and is especially informative if general outcomes are replicated, since the strategy provides information about the conditions under which treatments are useful, as well as the convergent validity of a particular treatment. Also, differences in outcome between sites help develop preliminary hypotheses. The risk of not having useful information is lower, since failure at one site does not prevent useful information being obtained from another site.

The multiple-site study is logistically more difficult to control. Also, if outcomes at different sites are the same, the case for validity is established. If they vary, however, the source of differences is hard to detect, although hypotheses may be generated.



## Series of Partial Replications

The final strategy in this type of drug treatment research uses a series of partial replications. The replicates are partial because some aspects of the procedure vary, but the general questions asked and major aspects of the procedures overlap. This strategy usually involves a series of studies completed at the same site. Examples in drug treatment include the series of three Job Seekers' Workshop studies (Hall et al. 1977; Hall et al. 1981a, 1981b), and the series of contingency management studies completed by Maxine Stitzer and her associates at Baltimore City Hospital (Stitzer et al. 1977; Stitzer and Bigelow 1978; Stitzer et al. 1979a, 1979b, 1980). When properly designed, such studies have all the advantages of a single trial. They may also allow a more precise definition of the range of factors that determine effectiveness. These studies are less risky than the single, large-scale trial, because, even if one study is defective, others in the series may yield useful information. Series of partial replications are generally completed over a considerable time period. Thus, failures to replicate can be the result of weak and variable effects, or the result of changes that occur because of the passage of time. An example of the latter is changes in characteristics of clients attracted to a particular treatment.

For this review, controlled trials are broken down into three classes: 1) major drug treatment modalities; 2) psychotherapeutic interventions, including contingency contracting, relaxation training, and biofeedback; and 3) vocational rehabilitation interventions. Because of the scope of the literature, studies were eliminated which, even if they had been executed perfectly, would not have yielded clinically useful information. These generally had one or more of the following characteristics: 1) They did not include followups (under conditions when followups were necessary for results to be clinically meaningful); 2) They had a sample size too small to allow any conclusions; or 3) They were so incompletely reported that they could not be evaluated. Also, one or two well-controlled studies (for example, Havassy and Hall 1981) were omitted, primarily because they addressed areas without sufficient research to draw any useful conclusions.

## COMPARISONS OF MAJOR DRUG TREATMENT MODALITIES

An early, ambitious comparison of methadone maintenance and therapeutic communities was reported recently by Bale et al. (1980). Five hundred and eighty-five male veterans were randomly assigned either to methadone maintenance or to one of three therapeutic communities. Subjects were interviewed, at 6, 12, and 24 weeks following treatment assignment. A cross check of interview and urine data indicated fairly good validity. Data was collected on drug use, criminal behavior, and work and school attendance. However, only 108 of the subjects accepted the random assignment, and spent as long as 1 week in their assigned program. Most subjects dropped out early in treatment, especially in the therapeutic community condition.

Because of this high dropout rate, and despite an exemplary followup rate and sophisticated data analyses, the outcome was virtually uninterpretable.

The only other comparison of major treatment modalities which was not solely a drug trial was the Heroin Antagonist and Learning Therapy (HALT) project, which began as a trial of behavior therapy, naltrexone, and naltrexone and behavior therapy combined. This study had a unique recruiting procedure: Subjects had to "earn" their way into treatment by completing phone calls to the treatment facility, avoiding drug use, and performing other prosocial behaviors. The most recent report (Callahan et al. 1980) presented only data from the naltrexone condition and the combined condition. Of the 104 potential male subjects in this condition, 40% earned their way into the naltrexone therapy condition, and 34% into the combined condition. Dependent variables were days on naltrexone, time in program, illicit drug taking, and reported side effects. These variables were assessed during three 7-month periods. The combined group showed more days on naltrexone, greater time in treatment, and reported fewer side effects during the initial assessment period. However, these differences disappeared during the second and third assessment periods.

An earlier report (Rawson et al. 1979) revealed the fate of the behavioral treatment condition. Of the 71 subjects assigned to this condition, only 15 (21%) completed the requirements necessary for entering treatment. Even the behavioral subjects who entered treatment had worse outcomes, including treatment completion, completion of therapeutic assignments, and illicit drug use than did the other groups.

Perhaps the behavioral treatment was so unattractive that only the most highly motivated clients persisted if they were assigned to that condition and the behavioral condition greatly worsened their outcome. Or perhaps only the least functional clients persisted and the behavioral treatment was potentially as effective, but the subjects enrolled in it were so impaired that the treatment could not bring them to the level of the rest of the sample. The latter possibility is less likely. However, as these considerations illustrate, the cause of any differences between conditions cannot be attributed to treatments since subjects may have differed prior to treatment entry.

#### Summary: Comparison of Major Drug Treatment Modalities

These early studies were basic, and I believe sophistication in design has increased greatly since their execution. Still, we can learn at least three lessons from them. First, drug treatment clients will not accept assignments to widely varying treatments, especially if they have a stake in one treatment or another.

Second, designs in which treatment entry differs between conditions are risky and will probably confound variables obtained later in the study. Both entrance and exit from treatment are clinically interesting variables, but they should not be studied through random assignment; any differences between conditions will compromise the interpretation of the remaining outcome data.

Finally, different drug modalities may attract different client groups. Therefore, comparisons between modalities are probably not possible

since no two modalities approach equal attractiveness for any one subject pool.

## EVALUATIONS OF PSYCHOTHERAPIES

### Psychotherapy

Perhaps the best controlled, single study of a psychotherapeutic intervention was the family therapy study completed by Stanton and his associates (1980). To be eligible for this Veterans Administration (VA) study, male applicants for methadone maintenance had to meet a restrictive set of criteria, including regular contact with parents or surrogates, and both parents living together in the same household. Over 25% of the clients screened met these criteria. Eligible subjects were assigned to family treatment if an opening existed. Otherwise, they were assigned to a standard treatment control. Family treatment subjects were randomly assigned to either paid family therapy, unpaid family therapy, or a paid family movie therapy condition. In the latter condition, families were paid for attendance at movies and for drug-free urines produced by the subjects. This condition controlled for time in treatment and for payment. Interview data obtained for two 6-month blocks following family treatment indicated different patterns of outcome. In the initial 6 months, both paid and unpaid family conditions had more drug-free days than the movie group or the nonfamily group. Differences were stronger for the paid than for the unpaid group; no differences in alcohol use or in days spent working in school were found. In the second 6 months, differences between the conditions were less.

This study was characterized by moderate rates for both pretreatment drop out (30%) and refusal to participate among family therapy assignees (21%). Analyses of the data did not indicate that the legitimacy of the comparisons was compromised by pre-existing differences between treatment conditions. Also, the nonrandom assignment probably introduced some unknown bias. However, if this bias existed, it was not evident. Attrition at followup was moderate and was not differentially distributed across treatments (11% at 6 months; 17% at 1 year).

This study is strong. The design, subject sample, length of followup, and verifiability of drug measures all provide reasonable conclusions about treatment efficacy. The paid family movie condition is an interesting innovation. However, it does not appear equal in credibility or expectations of success to the family treatment conditions. Also, since the treatment was conducted by a drug counselor, therapist status and expectations about change may have helped determine outcome. Thus, while the paid family movie condition controls for amount of contact and for use of contingencies without other therapeutic intervention, therapist variables are confounded with treatment variables. Also, the effects of differences in therapeutic attention and client expectations are unknown. Finally, this study should be replicated with women, for whom family dynamics may be quite different.

Apparently, the only studies in this category using multiple-site, partial replication in drug treatment were the psychotherapy studies in New Haven and Philadelphia. The impetus for these studies grew out of a series of conferences sponsored by The National Institute on Drug Abuse (NIDA) which considered the issue of psychotherapy—particularly psychoanalytic therapy—in drug treatment (Woody 1977).

The Philadelphia study indicated that psychotherapy might help addicts (Woody et al. 1983). On entrance into treatment, male methadone VA clients were randomly assigned to one of three conditions: 1) supportive expressive therapy, a psychodynamic therapy; 2) cognitive behavioral therapy; or 3) drug counseling. In the first two conditions, subjects received psychotherapy from a paraprofessional counselor in addition to drug counseling. In the third condition, only drug counseling was provided. All conditions were conducted according to detailed treatment manuals. Subjects could continue treatment with their therapists for up to 6 months. Clients were assessed on a battery of psychological tests, including the Addiction Severity Index (ASI) (McLellan et al. 1980), a multi-scale index which taps medical, legal, drug and alcohol abuse, employment, family and psychiatric problem severity; on the Schedule for Affective Disorders and Schizophrenia—Lifetime and -Change versions (SADS-L and SADS-C); and on urine test results, methadone dose, and licit prescription drug use.

According to study criteria, 60% of the clients were eligible for treatment. About 60% of these clients entered treatment and completed three sessions. From the beginning of the study to the 7-month followup, subjects who received psychotherapy in addition to drug counseling made more and larger gains than those who received counseling alone. They also were maintained on lower doses of methadone and ancillary medications, without increases in illicit drug use.

This study is sound. The experimental manipulations were successfully completed. The study provides data which indicate that the addition of psychotherapy to drug counseling may be valuable, especially for patients in some diagnostic classes (Woody, personal communication, May 1983).

The primary criticism of this study is that the treatment conditions differ on time in treatment. The investigators acknowledge this, and note that their aim was to study efficacy of adding psychotherapy to drug counseling, not replacing drug counseling with psychotherapy. Another factor is the possibility (unmeasured) that the conditions differed in treatment expectations, especially since the therapists differed in status.

The companion study in New Haven did not find a treatment effect (Rounsaville et al. 1983). This study evaluated short-term, interpersonal psychotherapy—a brief psychodynamic therapy for methadone clients with apparent psychiatric disorders. Subjects were 72 clients diagnosed as having current psychiatric disorders, such as anxiety or depression. Clients doing poorly in treatment or having significant psychopathology were especially encouraged to attend. In

the psychotherapy condition, subjects received 1 hour per week of individual therapy with a professional therapist. The control condition did not receive individual psychotherapy, but met with a psychiatrist once per month for 20 minutes. Treatment manuals were used as guides. Both conditions received access to all clinical services and the standard 90-minute group therapy provided all clients. Treatment was available for 6 months. The multiple outcome measures included treatment attrition, number of urines positive for illegal drugs, number of arrests, psychiatric symptomatology, personal and social functioning, and attainment of individual goals. Attrition was high in both conditions; only 38% of the subjects completed the psychotherapy condition, and 54% completed the control condition. The results indicated few differences between the two groups.

The authors discussed several factors which might have obscured differences between conditions. They included the large amount of counseling provided for all subjects, the selection of only psychopathological subjects, and the restriction that subjects be recruited into the study only after spending 6 weeks in methadone treatment (when motivation to change may be less than earlier in treatment). Two other factors warrant consideration. First, the 90-minute group sessions and the individual sessions may have provided conflicting therapeutic directives. Second, by encouraging clients who were not doing well in methadone treatment to enter psychotherapy, the most noncompliant clients may have been included in the study. This could explain the extremely high dropout rates.

These two studies of psychotherapy, taken individually, are clearly among the strongest in the drug treatment literature. They provide comparisons of standardized treatments, use treatment manuals, and use reliable and valid measures with clinically appropriate populations and therapists. The Philadelphia study controlled attrition sufficiently for interpretation of results. However, neither study addressed nonspecific effects or exceptional factors.

These two trials imply that further research is needed on psychotherapy. They also suggest two methodologies for such research. One, the measures used may provide the basis for assessing drug treatment. Both used standardized measures which were sensitive to therapeutic change in drug treatment clients. Two, the contrast between outcomes of the two studies suggests that the recruiting and implementation strategies of Woody et al. (1983) should be considered in designing additional treatment trials. These strategies include induction of a broad range of clients early in treatment, as well as the close integration of drug treatment and psychotherapy staff.

Despite the costs, these two studies illustrate the potential benefits of multiple-site studies. First, the studies alone are of value. Second, comparisons between them on the limited set of variables on which they differ provide some clear hypotheses for further study. Finally, had the brief analytic therapy been effective in both sites (as it might in possible future trials), the therapy would be established as a generally useful tool.

## Contingency Contracting

Contingency management is a behavior change intervention in which reinforcers and punishers are provided depending on adaptive behavior. Drug treatment clinics—especially methadone clinics—have control over several reinforcers which could be used, including methadone dose and take-home privileges.

A series of partial replications on contingency management were completed by Maxine Stitzer and her colleagues at Baltimore City Hospital. Stitzer and Bigelow (1978) demonstrated that take-home doses can be used on chronic nonattenders to increase attendance at counseling sessions. Weekend take-home doses, which were either contingent on or independent of session attendance, were given to 16 subjects during five successive 2-month periods. During contingent delivery periods, attendance increased significantly above levels observed during noncontingent periods, when attendance rates did not return to the same low level observed during the baseline phase.

Stitzer et al. (1980) assessed the effects of a limited contingency "menu" on heroin use. The participants were seven male clients who consistently produced morphine-positive urines during a baseline period. Reinforcement was available during randomly selected weeks for clients with morphine-free urines. Reinforcers were a choice between \$15, two methadone take-home privileges, or two opportunities to self-regulate dose. During contingent reinforcement, the rate of morphine-positive urines declined significantly. However, the morphine-positive rate also declined during study periods when no reinforcement was available.

Two other studies from this group addressed the use of illicit benzodiazepines among methadone maintenance clients. In the first study, eight chronic benzodiazepine abusers were given prescriptions for 20 mg diazepam daily. If they refused their dose, they were given the opportunity for one take-home dose, or self-regulation of their methadone dose for a day. During baseline, 95.6% of available diazepam was requested. Only 11.2% of diazepam was requested when refusal resulted in take-home doses, and 69.7% when refusal resulted in methadone dose self-regulation opportunities. Unlike counseling session attendance and heroin use, requests for the diazepam prescription rapidly returned to baseline levels when reinforcers were terminated.

This methodology was extended in a subsequent study (Stitzer et al. 1982) to out-of-clinic benzodiazepene self-administration. The ten subjects were selected on the basis of a history of benzodiazepine abuse. Benzodiazepine-free urines were reinforced by a choice of two methadone take-home doses, \$15 cash, or two single-day opportunities to self-regulate dose. The efficacy of the contingencies was evaluated in an A-B-A (baseline-treatment-baseline) design. Clear effects were evident in five of the ten subjects; benzodiazepine use decreased during treatment, and returned to baseline levels during the second baseline. During the intervention period, three other clients showed runs of five to eight consecutive clean urines which were not present during the baseline period.

The small-scale, well-controlled studies of Stitzer's group suggest that contingencies can control problem behaviors in methadone maintenance clients. However, these behaviors are sometimes found not to return to baseline levels when a repeat baseline is included as the final phase of the study. Since some therapeutic effects occur during noncontingent periods, nonspecific effects may result from participation in an experiment.

Similar positive results were reported by Hall et al. (1979) in a study completed in 21-day outpatient detoxification. Unfortunately, the methodology of this study did not control for attention-related effects. The 81 subjects were randomly assigned to receive either standard treatment, or contingent payment and information feedback for opiate free urines and treatment completion. A single experimenter administered both contingent and noncontingent conditions. Contingent payment increased the rate of drug-free urines on days when subjects were paid (but not on unpaid days) and did not affect treatment completion.

Any treatment effect in 21-day outpatient detoxification is important since this modality may have little therapeutic impact (Sheffet et al. 1976; Wilson et al. 1975). However, this short-term treatment effect could result from payment, feedback, increased attention, or other nonspecific factors regulated by this design.

The only negative results from contingency management were those reported by Havassy et al. (1979) and Havassy and Hargreaves (1981). The 116 subjects from two methadone maintenance clinics were randomly assigned to either dose self-regulation, self-regulation with take-home incentives for dose reduction, or to a standard treatment control for 48 weeks. No reinforcement effect was found in this study, even among the subset of clients on voluntary detoxification.

This study may have failed to find a positive outcome because of factors unique to the setting. Shortly after the initiation of the study, the clinics became involved in long-term political and administrative turmoil which lasted throughout the study. Although the delivery of treatment was monitored by research staff, such chaos may have swamped experimental effects.

#### Relaxation Training and Biofeedback

Three controlled studies of relaxation response are notable, primarily because of the convergence of their findings and the disagreement of these findings with uncontrolled clinical reports. After completing a small (n=20) pilot study which showed weak positive results, Khatami et al. (1982) assigned 37 male, VA methadone clients to either a biofeedback condition or to a noncontingent, "pseudobiofeedback" control. Pseudobiofeedback control subjects received feedback matched to an experimental subject, independent of their own response. Subjects were assessed on patient self-report, including measures of depression, anxiety, withdrawal symptoms, drug references, and psychiatrist rated depression. Information was also obtained from patients and their counselors on job or school status, social adjustment,

and illegal activity. Subjects were evaluated at the end of the treatment and at 1-month followup. Data were only obtained for the subjects who completed 15 sessions (n=19).

The two groups had no meaningful differences. The control condition in this study is particularly noteworthy; it controlled for all attention- and expectation-related factors which might be correlated with biofeedback. However, the sample sizes were sufficiently small—especially after attrition—that even clinically interesting differences were statistically insignificant, and therefore overlooked. For example, the experimental group showed positive changes in several self-report measures, and showed less opiate relapses. But the sample size was so small that differences did not reach traditional levels of statistical significance.

However, negative findings were also reported in a larger scale study of relaxation training—a therapy considered by many practitioners to be similar to biofeedback. Our group completed a study of relaxation training as an adjunct to methadone detoxification (Hall et al. 1983). The 53 subjects recruited from seven methadone maintenance clinics were randomly assigned to either a relaxation information condition or to a standard treatment control. Treatment followed a manual (Kushner et al. 1981). Two therapists each led half the treatment groups. Clients were assessed at weeks 0, 5, 12, 24, and 52. Assessments included measures of general and detoxification-specific anxiety, mood state, withdrawal symptomatology, and self-reported alcohol and drug use. Methadone dose and urine test results were collected throughout the 1-year followup period. Seventeen of the 27 experimental clients completed treatment.

The data indicated little difference over the year between the experimental and control subjects in methadone dose reduction or complete detoxification. Experimental subjects reported less alcohol use and fewer withdrawal symptoms immediately following treatment, but these differences were not evident at later followup periods. No differences in other psychometric measures were found. This study did not control for therapist expectations or attention. Further, the attrition in the experimental group was great enough that it could have prevented a fair treatment assessment.

#### Summary: Psychotherapy, Contingency Management, and Relaxation Training

The conclusion is that random assignment studies are feasible if the subjects are all drawn from the same drug treatment modality. The success of these trials at methadone maintenance clinics suggests the importance of embedding psychosocial interventions in other modalities with "bonds" to reduce attrition. Informative trials have been completed. Many of these studies are characterized by clear descriptions of the treatments delivered, or, even better, by use of a treatment manual. In most instances, the only conclusion which can be drawn, however, is that a specific treatment is better than a standard treatment. Such designs are appropriate in a new field. However, designs which control for therapist- and attention-related factors are



the next step. Also, the studies provide little, if any, information about treatment processes; that is, what factors in the treatment are correlated with change. Contingency contracting and psychotherapy show some promise; relaxation therapy and biofeedback do not.

## VOCATIONAL REHABILITATION

Three large-scale, random-assignment, controlled studies were completed on vocational rehabilitation in drug treatment. The earliest of these was the Wildcat Demonstration Program (Friedman 1978) which evaluated the effects of supported work on 604 drug treatment clients, 80% of whom were from methadone programs. The intervention was compared with a standard treatment control condition. Criteria for acceptance into the study varied across time. The exact intervention also varied; some subjects were placed with work crews, others were not. At the end of the supported work period, efforts were made to place participants in nonsupported jobs. These efforts also varied. Clients were interviewed at intake and during the following 3 years. Interview information was verified against other data sources. About one-third of the original sample was lost. Included in this one-third were 30 experimental clients who failed to take the job assigned to them. Differences in employment, use of public assistance, and stable relationships occurred during the year of supported work, but mostly disappeared during followups. No differences were found in drug abuse.

Any interpretation of the results is weak with such a large proportion of the sample lost—particularly since 30 of the experimental subjects lost had removed themselves from the sample by never appearing for work. These were the least motivated clients, and their exclusion artificially increased the differences between the two groups. Also, even if the differences between the groups are "real," the interventions are so diffuse and poorly spelled out that it is difficult to describe the experimental conditions which may have caused the differences.

TREAT (Training, Rehabilitation, and Employment for Addicts in Treatment; Bass and Woodward 1978) recruited subjects from a single, large, multimodality drug treatment program, and randomly assigned them to either Comprehensive Employment and Training Act (CETA) training or to a control condition. Experimental clients were more likely to decrease drug use (as indicated by urine analysis) and to show better outcome on a multicomponent measure of treatment outcome, but showed no differences in treatment retention or criminal behavior. Experimental subjects worked full time more often and earned higher salaries than controls, but showed no differences in the number of weeks worked.

Again, confidence in these results is diminished by the procedure used for experimental dropouts; results were reported for the entire control condition. But, in the experimental condition, early dropouts were replaced and not included in the data, thus biasing the data in favor of the experimental condition. Later dropouts were not replaced.

Also, perhaps differences between the conditions existed prior to the intervention; 21% of the experimental subjects and 35% of the controls had not worked in the 2 years prior to the study. Other research (Hall et al. 1981b) showed that lack of recent employment history is a powerful predictor of failure in job seeking.

In the random assignment, supported work project of the Manpower Demonstration Research Corporation, approximately 1,200 (12%) of the 10,043 participants were ex-addicts (Board of Directors, Manpower Demonstration Research Corporation 1980). Over half the ex-addict sample (54.5%) was drawn from methadone maintenance clinics; the remainder were primarily from drug free treatments. Subjects in three cohorts were followed for 1, 2, and 3 years, respectively. At the end of the 12-month, supported work period, clients were assisted in finding employment. All subjects who completed random assignment and who could be located were included in the final data analyses. One-year followups—which were completed for all available subjects—provided data on only 974 subjects. However, differential attrition between conditions was not evident.

During the supported work period, experimental subjects worked more hours than controls and had higher employment rates. Interpretation of the followup data was difficult because of differences between cohorts entering the program at different time periods. In general, differences were only significant for early entrants, primarily because of lower employment rates among early controls. Supported work did not influence drug and alcohol use. However, arrest rates for the conditions differed, especially during the period immediately following supported work. Methadone clients benefited more from the program than did other drug treatment clients.

Why such large sample sizes were needed is unclear. Monitoring experimental procedures to prevent significant deviations over time and across sites is difficult with a large sample; deviations increase variance and could attenuate the findings. A second problem concerns precise specifications of the interventions themselves, especially in staff contact and peer group support. This problem mostly affected multisite studies that had significant variations across time and from site to site. Also, the handling of dropouts and missing subjects was often vague enough that legitimate conclusions could not be drawn. An investigation of change mechanisms and a better link between actual intervention content and outcome are needed. Differences in outcome as a function of intervention leaders have rarely been addressed, and no studies comparing different treatments or attention controls exist.

We have completed a series of small-scale studies to test the usefulness of a job-finding intervention for drug treatment clients. The Job Seekers' Workshop (Hall et al. 1977, 1981a, 1981b) is a behaviorally based, skill training program designed to help ex-heroin addicts increase job interviewing and job skills. Treatments were based on a manual. In the initial study, 49 methadone maintenance clients (recruited from several clinics) seeking either jobs or placement in a competitive skill training program were randomly assigned to the

workshop or to a minimal treatment control. At the end of the workshop, an interviewer who was "blind" to experimental conditions rated subjects on employability/acceptability as trainees. Three months after the interview, subjects were contacted and asked whether they had found a job. Of the experimental subjects, 50% had been placed; only 14% of the controls had found employment or placement in a training program. Also, Job Seekers' Workshop clients were rated more favorably than the controls on both interview skills and completed application forms.

In a second study, 60 job seeking, methadone maintenance clients were assigned to either the workshop or the minimal contact (information only) control. The program, which was streamlined from the initial effort, was presented in 11 hours over 4 days. At treatment termination, subjects were assessed by two "blind" interviewers on a multi-item scale tapping specific interview behaviors. Experimental subjects were rated more positively than controls, particularly in general interview competence and manner of presentation. By the end of 3 months, 52% of the experimental subjects were employed, as compared with 30% of the controls.

In a final study, 55 probationers and parolees with heroin abuse histories were randomly assigned to the workshop or to the control condition. The workshop content and format were modified to suit the needs of this population. Measures were identical to the previous study. The two groups differed on scales measuring interview skills and rate of employment. By 3-months posttreatment, approximately 86% of experimental subjects had found employment, as compared to 54% of controls.

Considerable similarity in outcome exists between the two methadone maintenance studies. In both, employment rates at the end of 3 months were approximately 50%. Some variation in control group data existed between the two studies (14% vs. 30%), but, in fact, when subjects seeking placement in training programs were removed from the data of the first study, these differences lessened. Further, the data indicated a sharp difference between methadone maintenance and criminal justice subject pools. Interventions were essentially identical among the three studies. The methadone maintenance samples had similar overall employment rates; both groups had considerably lower overall employment rates than the criminal justice sample.

The studies did not control for time in treatment or for expectations. Leader differences were noted in the only study which evaluated them—the second methadone maintenance study; but characteristics which described successful and unsuccessful leaders could not be determined.

#### Summary: Vocational Rehabilitation Interventions

In many ways, the research strategy for vocational rehabilitation interventions has been less rigorous than that of psychotherapy studies. The treatment protocols are vague, changing with time and varying from site to site. In some instances, dropout rates may have

compromised the random assignment. Despite these many faults, a surprising convergence emerges from the data: in effect, supported work projects, independent of their precise content, decrease dependence on public assistance and increase employment. These work projects may not have much long-term effect, and they do not directly affect drug abuse.

Even though these studies were not designed for replication, they accomplished that purpose better than might be expected. However, small-scale, well-controlled studies have been successfully conducted in this area, and seem to yield more conclusive results. These results indicate that skill training is a promising modality for enhancing vocational effectiveness. However, further research on nonspecific factors in skill training is desirable.

## CONCLUSIONS AND RECOMMENDATIONS

1. Well-controlled, small trials with sample size based on power analyses have been the most successful in yielding clear outcomes and comprehensible data. The best of these trials are characterized by use of a treatment manual or a standardized treatment, and by well-developed procedures for tracking patients over a long time span. Further research of this kind should be completed and is preferable to large, national attempts at controlled outcome trials where variations are so great, and the size of the projects so large, that findings are difficult to interpret.

2. Research strategies which are planned with some degree of replication are preferable to isolated single trials for several reasons. First, if such trials are relatively small scale, the risk associated with one trial is less because several studies can be built into the research plan. Second, replication quickly provides clear hypotheses for further study. Finally, such strategies determine the situations and parameters under which an intervention is effective.

3. Developing a basis for measuring drug use might help in evaluating treatments. The core of such measures lies in drug screens from urines and in treatment attendance data. However, more standardization in psychosocial areas would be useful. The ASI could provide part of this battery. Again, this standardization would facilitate replications and comparisons between studies.

4. Promising strategies have emerged from controlled research. Clearly, more studies are needed on psychotherapy, contingency management, and skill training. In psychotherapy, the findings of Woody et al. (1983) need replication in a different site. Also, the positive results of family therapy warrant more research, especially since, next to medical service, psychological and family services are among the most frequently offered treatments. The proportion of women clients in treatment seems to be increasing, so the inclusion of women seems even more crucial—especially in family therapy studies.

Two directions are important in contingency management. One is controlled studies which partial out any placebo factors from specific

treatment effects. The other is larger scale studies which evaluate the effectiveness of contingencies in one or more "typical" drug treatment clinics. This point is important, because the best work to date has been completed at one site in a small research clinic. Skill training appears to be valuable, and is appropriate and acceptable to the drug treatment clients. Studies evaluating its use outside the vocational area seem warranted.

5. Many valid studies have demonstrated differences between innovative treatments and standard treatment controls. Refinements in intervention design are needed. Factors such as time in treatment, placebo, and expectational effects have been neglected. Often these factors can be controlled or measured without sacrificing clinical generalizability.

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# Outcome of Narcotic Addict Treatment in California

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## INTRODUCTION

Society has attempted for many years and in many ways to control and rehabilitate the narcotic addict. Where all methods of social intervention have achieved less than desired results, methods which incorporate some concept of treatment have generally been more effective than those that have not. In particular, solely criminal sanctions have proven relatively ineffective. The theory underlying the preceding statements is based partially upon interviews with more than 400 heroin addicts of both sexes, diverse ethnic backgrounds, and heterogeneous personality types. These interviews were conducted in the course of several treatment followup studies of some 1,700 narcotic addicts in which their entire addiction careers (from 12 months prior to their first use of a narcotic up to the time of interview) were chronologically recorded. The data collection procedures allowed a determination of quantifiable changes over time in addiction related patterns of behavior. The analyses of the addict career histories further substantiate this theory. These results are presented in detail elsewhere (Anglin 1980; Anglin et al. 1983; McGlothlin and Anglin 1981a; McGlothlin and Anglin 1981b; McGlothlin et al. 1977). Some highlights of this research and their implication in assessing the overall efficacy of drug abuse treatment will be presented here.

Our research group at UCLA has conducted a number of followup studies of narcotic addicts in two types of long term treatment: civil commitment and methadone maintenance. Civil commitment was virtually the only major publicly supported program for addicts during the 1960s. Methadone maintenance became a major treatment modality for the State beginning in 1970.

Some comments about the use (or misuse) of the word "treatment" when applied to narcotic addicts are in order. The word is borrowed directly from medicine, where it is applied to any course of action designed to cure, ameliorate, retard, or provide symptomatic relief from a physical disease or condition. Generally, desirable results are obtained from a medical course of treatment. Thus, the term has most often become associated with its highest level application: cure. Although the use of the term in the area of drug abuse is appropriate,



the level to which it can be applied is typically much lower: amelioration, retardation, temporary relief, or no effect. A rational evaluation of treatment efficacy in drug abuse has to deal with the general public's expectation of treatment as a cure. Given the multiple determinants of a complex physio-psycho-social behavior such as addiction, the generally poor premorbid characteristics of those who become addicted, and the lengthy time course of the addiction, it is not surprising that cures, in the usual sense of the word, are relatively rare. They should not even necessarily be expected.

Three considerations are important in evaluating treatment outcomes. The first is a clear description of the characteristics of the target population to be treated. Addicts are a very heterogeneous group and the etiology of addiction is complex. This renders the goal held by public health administrations of providing a comprehensive system of services much more difficult to implement. Second, the proportion of patients meeting the various treatment outcome levels mentioned above must be considered. What proportion are "cured" of their addiction? What proportion experience amelioration vis-a-vis society and themselves? For what proportion is the treatment ineffective at that time? It should be expected that those proportions would not favorably compare to those resulting from treatments for most physical diseases. Finally, the consideration of treatment effects over time is an important one. Unlike the physical diseases, most character disorders can be expected to be chronic. Since long term-addiction may often have more psychological components associated with it than physiological ones, it should be expected to be a chronic condition in the majority of cases.

The general question then becomes a probabilistic one: "What is the time-related probability that the outcome of treatment will be desirable for a group of addicts with defined characteristics?" Time-related means the proportion of addicts showing the desired outcomes at stated intervals (in years, probably) during or after treatment. Desirable would mean some demonstrated amelioration for society or for the individual in the expected nontreated course of the addiction. The phrase "defined characteristics" emphasizes the understanding that premorbid characteristics of the individual addict are important in determining outcome of treatment.

Having these distinctions made explicit leads to very different evaluation questions from those typically asked in the drug abuse field. The stereotypical question has been: "How many patients become completely drug free (cured) after treatment?" It is more appropriate to ask, "How has the course of the behavior been changed for the betterment of society and the individual from what it probably would have been had treatment not been available?" A corollary question is, "What is the overall benefit of the treatment compared to the cost to society for providing it?" This question is not as unhumanitarian as it seems; it is a necessary consideration in any society with limited resources. Cost benefit analysis, usually determined by the traditional economic weightings of reduced criminal costs and increased treatment costs, can be appropriately augmented by humanitarian considerations such as the quality of life improvement envisioned for the addict.

Presented below is an overview of the results our research group obtained from evaluations of the California Civil Addict Program (a civil commitment program hereafter abbreviated as CAP) and of several methadone maintenance programs in the Southern California area (hereafter abbreviated as MM). Full descriptions of these studies may be found in McGlothlin et al. (1977), Anglin (1980), McGlothlin and Anglin (1981a), McGlothlin and Anglin (1981b), and Anglin et al. (1983).

## Background

Since 1973, we have conducted research on heroin addiction and treatment in California. The greater part of our research has been directed toward evaluating the effectiveness of civil commitment and/or methadone maintenance for chronic heroin addicts. Measures used were narcotic and other drug use, incidence of crime and/or drug trafficking, employment, and family stability. Evaluations included assessments of the cost/benefits of these programs. During the past 10 years, we have conducted four major studies involving ten chronic addict samples (primarily male) for a combined sample size of 1784 (McGlothlin et al. 1977; Anglin et al. 1981; McGlothlin and Anglin 1981a; Anglin et al. 1983). Each sample was drawn from a different program or from multiple programs. Thus, we have sampled a reasonable number of long term California treatment programs (including some of the largest) from various geographical areas, serving different client populations, and, with Federal and State guidelines, having diverse administrative policies. We have been able to address questions concerning what effect treatment entry and treatment termination had on addict behavior, and what specific subgroups of addicts responded differently to treatment efforts. Our followup interview was designed to take retrospective longitudinal data covering the entire addiction history, from 12 months prior to first narcotics use to the time of interview. This approach allows for time series analyses of behaviors for extended periods before and after entry into treatment. The self-report data obtained from the interview are supplemented by the official arrest and incarceration history as detailed in the California Criminal Investigation and Identification record (CII or "rap" sheet) and by urinalysis results from a voluntarily obtained specimen requested, without prior notification, from a volunteer at the time of interview.

## Samples

The research data were obtained from samples of heroin addicts identified from three general sources: 1) admission records of the California Civil Addict Program (CAP), a compulsory treatment approach operated by the Department of Corrections and the major treatment program available during the 1960s; 2) admission records of various Southern California county methadone programs; and 3) active client lists of Southern California county methadone programs. In some instances the samples were representative of the populations of their respective programs; other samples were matched to these representative samples for comparison purposes and are themselves not necessarily representative.

Table 1 summarizes the geographical and chronological characteristics of the ten samples. Sample sizes of interviewed subjects are reasonably large and represent from 83% to 97% of the originally selected samples. The median dates of the first daily use for the 10 samples range from August, 1958, to February, 1970. Median interview dates range from January, 1975, to March, 1979. For those entering methadone maintenance, the post-methadone entry followup periods range from 20 months to 82 months. The samples are generally representative of addicts from many areas in the State. The time periods for which data were obtained cover two decades, the 1960s and the 1970s.

### Interview Procedures

The interview was adapted in part from a schedule developed by Nurco and colleagues (1975), and has been described in detail in an earlier monograph (McGlothlin et al. 1977). Briefly, a schematic time sheet is prepared prior to the interview showing all known arrests and intervals of incarceration, legal supervision, and methadone treatment. The interviewer establishes the date of first narcotic use on the time chart, then proceeds chronologically to the point where narcotic use changes from less than daily use to daily use, or vice versa, or the respondent's legal status changes. Data is then collected on narcotic use, employment, criminal behavior, and certain other variables for that interval. The interviewer then proceeds to the next interval, and so on until the interview date. Each interval is uniform in terms of narcotic use, legal status, and drug treatment enrollment. This method of segmenting the interview into intervals which are meaningful to the respondent has proven quite successful in collecting retrospective data. Typically, the respondents appear to have little difficulty recalling, for the specific period, whether they were employed, how frequently they were using narcotics, their costs, and how they were obtaining funds for drug purchase. The procedure requires the interviewer to work closely with the respondent to structure the period of concern. Extensive interviewer training is necessary. The authors participated as interviewers for all samples and were responsible for training and supervising the interviewing staff. Graduate students in psychology, sociology, and education served as interviewers.

### RESEARCH RESULTS

The accumulated data base collected for the 10 samples provides sufficient information to answer questions concerning many aspects of civil commitment and methadone maintenance treatment. Immediate and long-term outcomes of these two treatment approaches are summarized below.

Perhaps the best evidence for the efficacy of both civil commitment and methadone maintenance treatment comes from evaluation of the California Civil Addict Program (McGlothlin et al. 1977). For this study we were able to construct a pre/post time series design with a matched comparison group. The treatment groups came from two different time periods: early admissions to the program, in the years 1962-1964, and later admissions, from the year 1970. The size of the

1964 admissions sample was 225, and the 1970 sample size was 251. The comparison sample came from a group of 1962-1963 program admissions who were released after nominal exposure to the inpatient phase of the program because of technical errors committed by the courts. A sample of 214 was chosen from this group to match the characteristics of the treatment groups.

TABLE 1  
Characteristics of UCLA Followup Samples of Heroin Addicts  
Entering Treatment

Sample	Interviewed		% Male	Date Program Opened	Median Date				Mean Months at Int.	
	Percent*	Number			First Narcotic Use	First Daily Use	Prog. entry	Research Interview	Since First Daily Use	Since MM Entry
Civil commitment										
CAP (Comparison)	86	214	100	9/61	10/56	9/58	1/63	3/75	206	145
Early CAP (Treatment)	86	225	100	9/61	10/58	10/60	7/64	3/75	189	126
Late CAP (Treatment)	93	251	100	9/61	4/65	2/67	6/70	2/75	116	56
Methadone maintenance										
L.A. County Admissions	92	120	100	10/70	7/56	8/58	12/71	11/78	243	82
S.B. County Admissions	96	90	100	6/71	11/61	5/63	8/72	11/78	186	76
Orange County Admissions	83	87	100	11/69	11/60	7/64	9/72	3/79	176	80
Bakersfield Cross-section	97	94	59	12/71	6/69	2/70	8/75	8/78	113	48
Tulare Cross-section	97	83	64	6/69	10/68	9/69	4/74	8/78	128	58
San Diego Cross-section	95	331	54	1971	9/69	8/70	6/75	2/81	141	73
SD Comparison Cross-section	94	236	50	**	11/69	4/71	1/77	3/81	135	61

\*Of those originally selected and alive at time of interview.

\*\*This sample was selected from the San Bernardino, Orange, and Riverside County methadone maintenance programs.

## The Effects of Civil Commitment

Figure 1 is a time series presentation of the effects of the civil addict program on the daily narcotic use of the two treatment samples and the comparison sample. The percentage of precommitment and postcommitment nonincarcerated time during which the respondents reported that they were using narcotics daily is represented. During the precommitment period, the comparison sample (minimally exposed to the CAP) shows a somewhat higher percentage of daily use than that for the early treatment (maximally exposed to the CAP) sample. The rate of daily use is relatively low for the late treatment sample during the early precommitment years, perhaps as a result of more polydrug use and less commitment to the opiates. An interesting aspect of the precommitment graphs is the sharp rise in daily usage which occurs during the two years prior to admission for all three samples. This rise in usage is undoubtedly closely related to the initiation of the commitment proceedings. A similar rise in usage very likely occurs during the period preceding volunteering for, or being coerced into,

treatment programs generally. Thus, followup evaluations which utilize relatively short pretreatment baseline periods are likely to ensure a spurious improvement in the postadmission behavior by virtue of this self-selection phenomenon.

The postcommitment graphs of daily narcotic use show a marked improvement in behavior for the early treatment sample over the comparison sample for the first four years, and a moderate improvement during the remaining time until the interview. The percentage of postcommitment daily narcotic use for the late treatment sample begins substantially above the early treatment sample level, but then falls below the latter curve by the time of the interview. As will be discussed later, a considerable portion of the sharp drop in the late treatment sample graph is attributable to the increasing percentage enrolled in methadone maintenance programs. Another reason for the drop in daily use in this sample is the higher rate of exclusions from the CAP and their subsequent prison sentences.

The comparison and early treatment sample graphs both show a gradual decline in daily use over time. This decline is in accord with the "maturing out" hypothesis (Winick 1962), but part of the decline in the later years is also due to increasing enrollment in methadone

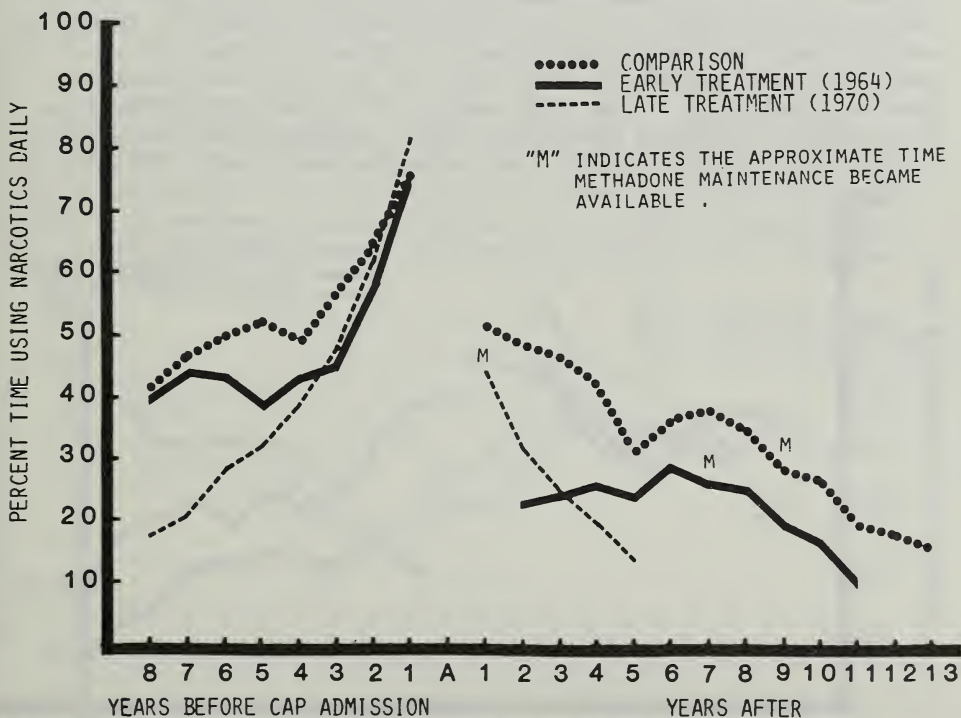


FIGURE 1  
Percent of Nonincarcerated Time  
Reported as Daily Narcotic Use: CAP Admission

programs. It should be kept in mind that the postadmission period for which methadone treatment was available varies for the different samples in figure 1. Methadone treatment became available about year 9 for the comparison sample, about year 7 for the early treatment sample, and year 1 for the late treatment sample. This may account for some of the difference between the rate of daily narcotic use for the comparison and early treatment samples during the years immediately prior to the interview.

Figure 2 presents the precommitment and postcommitment level of self-reported criminal activity. With the exception of the late treatment sample, the precommitment level is relatively stable until the rise in the last two years preceding the commitment (the period corresponding to a sharp increase in daily narcotic use). There are no notable differences between the precommitment levels of criminal activity reported by the comparison and early treatment samples. During the postcommitment period, the pattern is quite similar to that for the percentage of daily narcotic use for all three samples (figure 1).

Figure 3 shows the combined full- and part-time employment levels for the precommitment and postcommitment periods. During the precommitment period, employment generally declines over the time corresponding to the heavier involvement in daily narcotic use. The precommitment employment level for the comparison sample is more uniform than that for the early treatment group. In the postcommitment period, the comparison and early treatment graphs show a mirror image of the daily narcotic usage pattern (figure 1); For example, the figure shows much higher employment for the early treatment sample for the first four years, declining to only slightly

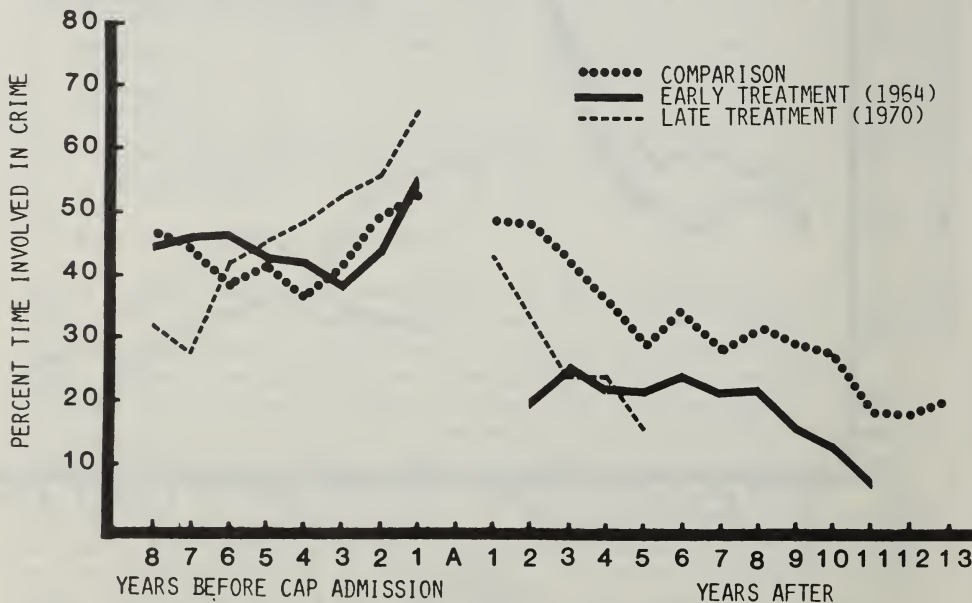


FIGURE 2  
Percent of Nonincarcerated Time Involved  
in Crime Other than Drug Offenses: CAP Admissions

higher employment thereafter. The postcommitment employment level for the late treatment sample is substantially lower than that for the early treatment sample, and shows a rise over time corresponding to the drop in daily narcotic use.

### Successive Effects of Civil Commitment and Methadone Maintenance

A second analysis allows an examination of the successive effects of the Civil Addict Program and methadone maintenance. Of the 439 combined comparison and early treatment samples used to evaluate the CAP, 118 (29%) subsequently entered methadone treatment when it became available in California in the early 1970s. By this time, nearly all the sample had completed the commitment period and were no longer under the supervision of the CAP. Thus, they were essentially "free agents" and could maintain their rehabilitated status (if it had been achieved), continue in an addicted life style, or enter a different type of treatment (methadone maintenance) for another try at controlling their drug use. The data showed that all three outcomes occurred for this combined sample.

Two populations could be differentiated from those who did not enter methadone treatment. One type, inactive addicts, consisted of individuals who, in the initial years of methadone maintenance availability in California, showed minimal drug use, and whose lifestyle gave little indication of a return to daily involvement with narcotics. This group may be considered, in Winick's terms, to have "matured out" of addiction (Winick 1962). The second type, active addicts, were individuals who, like methadone entrants, showed continued daily use of narcotics, but who had not chosen or had not been coerced into entering methadone treatment. This is the more appropriate reference group. It is composed of active addicts who supposedly would benefit from treatment, while inactive individuals have no need for methadone maintenance.

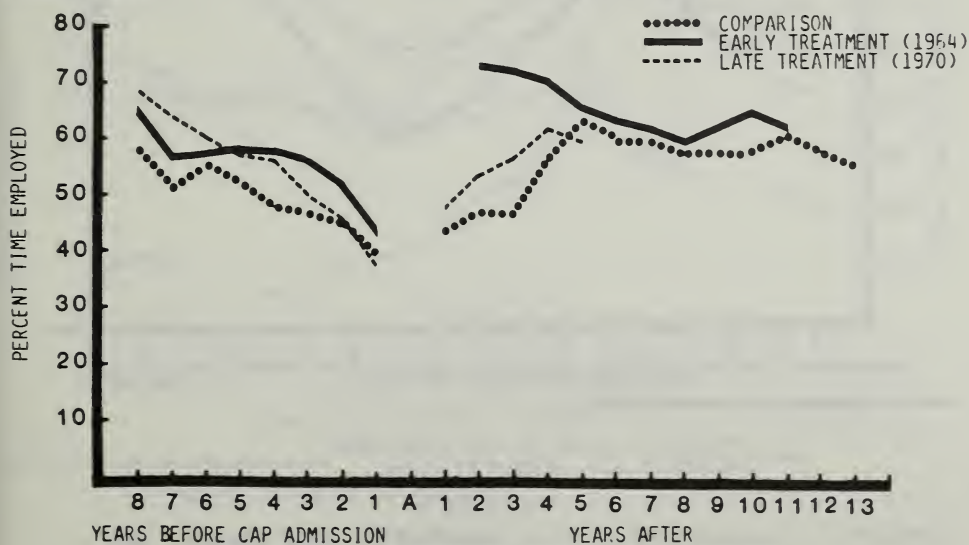


FIGURE 3  
Percent of Nonincarcerated Time Employed: CAP Admissions

An examination of the overall personality and behavioral patterns of those who entered methadone maintenance revealed that they had not responded well to any effort by society to control their addiction and had not themselves been able to achieve the control shown by a certain proportion of the addict population (the inactive subsample) (Anglin 1980). Generally they showed less antisocial behavior than the other chronic users, who did not enter maintenance (the active subsample).

Time series data were constructed to demonstrate the effects of the CAP and methadone maintenance on a comparative basis for the three subsamples. Figures 4, 5, and 6 present the data for daily drug use, criminal involvement, and employment for periods before CAP admission, during the CAP, after the CAP, as well as before and after methadone maintenance. In examining the implications of figures 4, 5, and 6, it is important to recall that two major social interventions have occurred for the sample: CAP commitment and methadone treatment entry. For this combined sample, the two events were well separated in time. These two interventions show clear effects in the time series graphs—both for the variables presented, and for other variables affected by addiction (Anglin and McGlothlin, in press).

During the pre-CAP period, the inactive subsample shows more employment and somewhat less incarceration, daily drug use, and crime involvement than the active subsample. The methadone subsample is

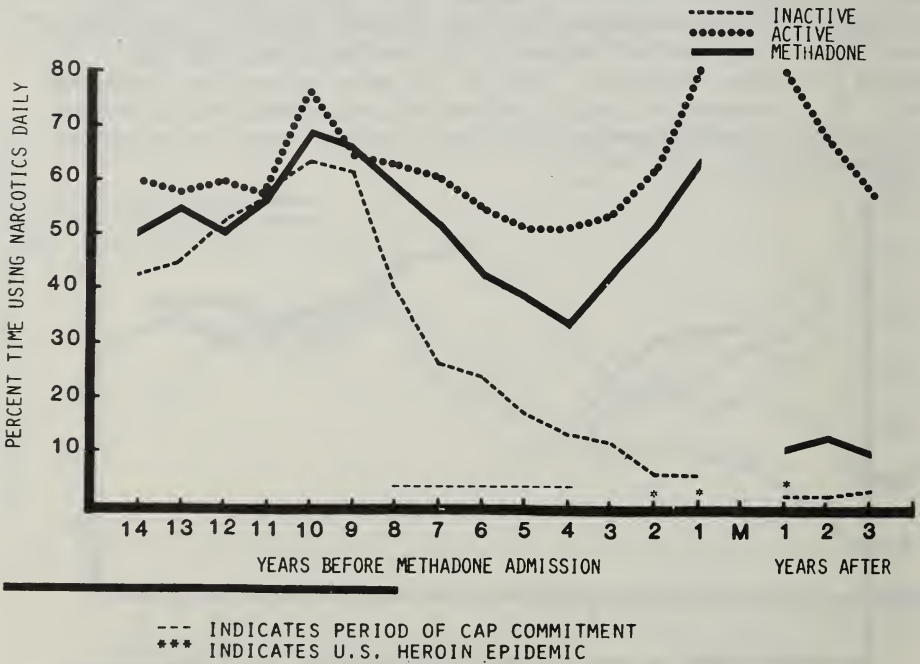


FIGURE 4  
Percent of Nonincarcerated Time Reported as Daily Narcotic Use:  
CAP Inactive, Active and Methadone Subsamples



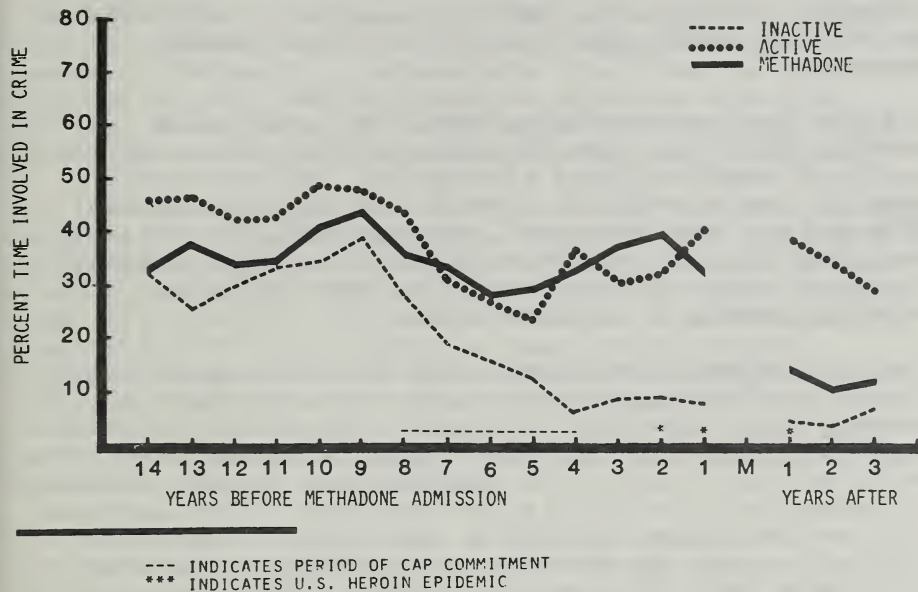


FIGURE 5  
 Percent of Nonincarcerated Time in Crime:  
 CAP Inactive, Active, and Methadone Subsample

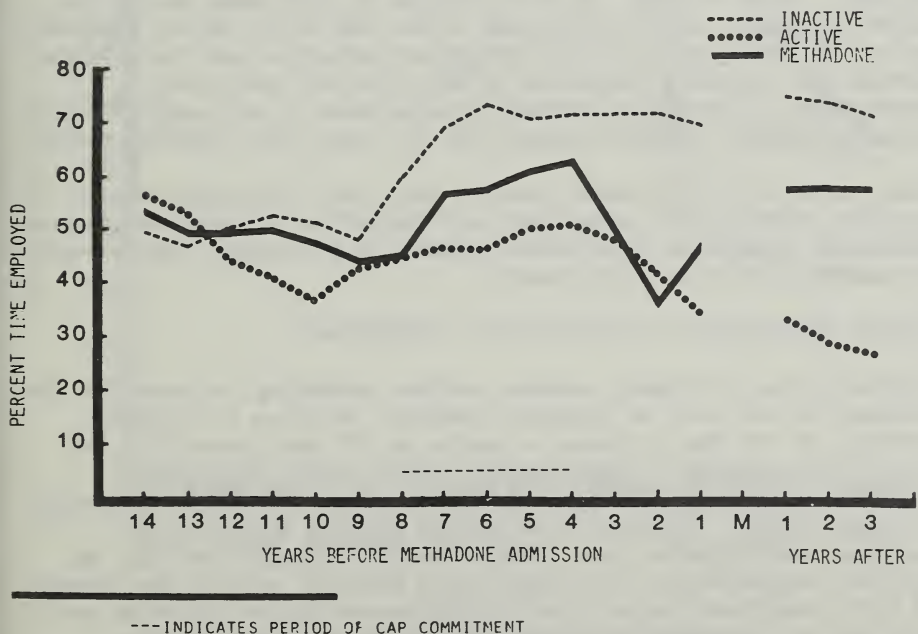


FIGURE 6  
 Percent of Nonincarcerated Time Employed:  
 CAP Inactive, Active, and Methadone Samples

intermediate, although a few fluctuations do occur in which values for the methadone sample exceed those of the active or inactive subsamples.

CAP commitment at premethadone entry, year 8, produces an immediate effect in all three subsamples, and this continues for the duration of commitment (years 8 through 14). The inactive group shows the greatest amount of improvement for the three behaviors (daily drug use, crime involvement, and employment) while the active group shows the least improvement. Except for criminal involvement, where their behavior resembles that of the active group, the methadone subsample is again intermediate.

The postcommitment, premethadone period (years 1 through 3) shows a continuation of these gains for the inactive subsample, illustrating moderate further improvement in behavior. The active and methadone subsamples exhibit marked increases in daily drug use and crime involvement, and a sharp drop in employment for the period. Part of this increase can be attributed to the termination of CAP supervision and a resulting "bounce back" effect. However, at this same time (1968-1971), heroin addiction was at epidemic levels in the United States (NIDA 1981). The increased availability of heroin appears to have resulted in higher levels of use by both the methadone and active groups. The inactive group had achieved enough control to not be affected.

Figure 4 compares the postmethadone period to the premethadone period. The active and inactive subsample data maintain nondisjunctive patterns. Note, however, the sharp decline in daily drug use for the active subsample, which corresponds to the end of the heroin epidemic period. In strong contrast, the methadone subsample data demonstrate marked and immediate reductions in daily drug use and crime involvement. A moderate increase in employment is also evident. The variables remain relatively constant for the three year followup period.

Data presented in this section confirm that, for considerable number of narcotics addicts, civil commitment and methadone maintenance produce substantial reductions in antisocial behavior and moderate improvement in prosocial activities (employment).

#### EARLY METHADONE MAINTENANCE ADMISSIONS

Another series of followup studies provides compelling evidence for the efficacy of MM alone in producing desirable outcomes in chronic addicts. In the first of these, a sample of 347 was drawn from the male first admissions in three multiple clinic county methadone programs in Southern California during the years 1971-1973 (McGlothlin & Anglin 1981b). The number of addicts selected from the Los Angeles, San Bernardino, and Orange County programs were 138, 99, and 110, respectively. The samples were selected to study the impact of civil commitment parole status on methadone patient behavior, and they are not necessarily representative of the overall methadone admissions to the programs (Anglin et al. 1981). Figures 7-10 are time series presentations which plot percent time in methadone maintenance,

daily narcotic use, crime involvement, and employment. The graphs show the immediate beneficial outcomes of treatment on these behaviors. Comparing the performance of clients from the three programs also shows distinct interprogram differences in level of desirable outcomes achieved. A brief synopsis of the policies of the three programs will provide a context for interpreting the results.

The Los Angeles program was initiated in October 1970, and generally employed a high-dose blockade policy. There was about an 18-month waiting list throughout the time period sampled, and preference was given to persons with a long history of addiction—hence the greater mean age at admission. There was no firm date at which clients were expected to detoxify, and, except for cases involving violence, involuntary terminations for program violations were employed only as a last resort after a series of probations and appeals. In April 1973, the State mandated a maximum dose of 80 mg per day unless State permission for an increase was received on a case-by-case basis. This resulted in some drop in dose levels.

The San Bernardino program began in September 1971, and the original protocol listed the stabilization dose at 80-160 mg. One year later, the dose was lowered to a maximum of 100 mg. This was further

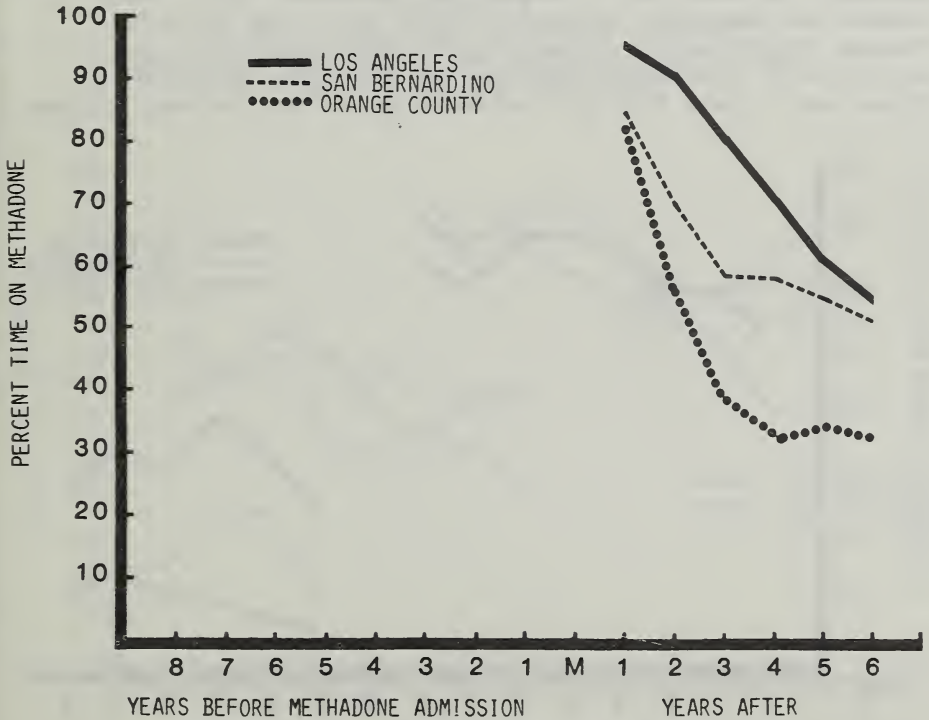


FIGURE 7  
 Percent Time on Methadone Following Entry  
 for Los Angeles, San Bernardino and Orange  
 County Methadone Admissions

reduced in April 1973 under the new State regulations. There was an initial waiting list of about 6 months, and admission was on a first come, first served basis. San Bernardino was also flexible with respect to involuntary terminations, and there was no firm expectation for a maximum time in the program.

The Orange County program differed considerably in policy from the other two. This program began in September, 1969, and initially employed stabilization doses of 80-120 mg. However, in October 1971, the maximum dose for incoming patients was set at 50 mg. Thus, a low-dose policy prevailed during most of the period in which patients were selected for this study. In May 1972, there was a two-year waiting period for admissions, but this had been reduced by 1974. In addition to the low-dose regimen adopted in 1971, the program imposed a fairly strict policy of termination for program violations, as well as an expectation of treatment graduation after two years on maintenance.

Effects of Treatment Entry

Of the three programs, Los Angeles and San Bernardino counties fit the MM-A (adaptive) type, and Orange County fits the MM-CO (change-oriented) type described by Gorsuch and associates (1976). While Gorsuch and associates' evaluation of the Drug Abuse Reporting Program (DARP) sample indicated similar improvements for clients in both types of maintenance programs, our data show considerable differences. Figures 7-10 are time series graphs for the three program

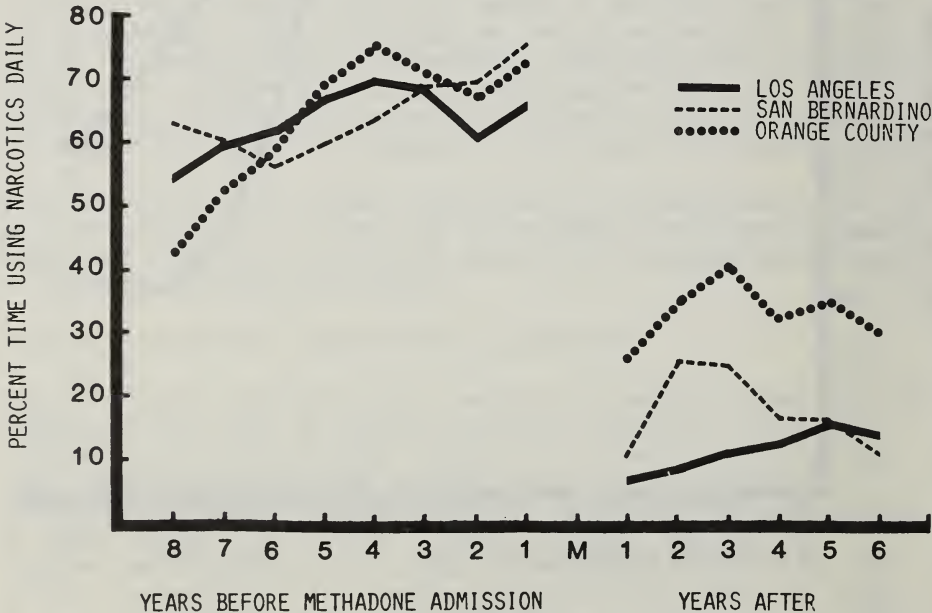


FIGURE 8  
 Percent of Nonincarcerated Time Reported as Daily Narcotic Use: Los Angeles, San Bernardino, and Orange County Methadone Admissions

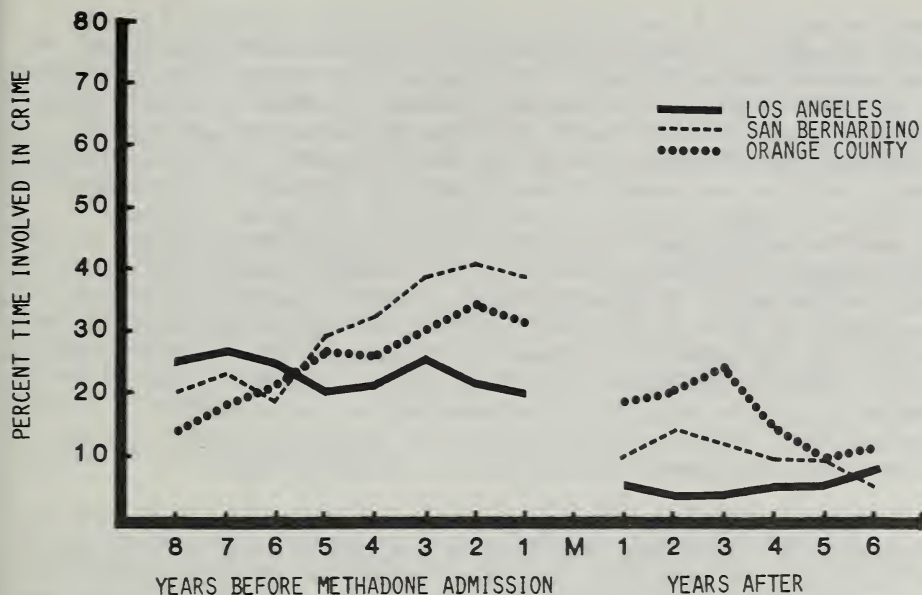


FIGURE 9  
Percent of Nonincarcerated Time Involved  
in Crime: Los Angeles, San Bernardino, and Orange  
County Methadone Admissions

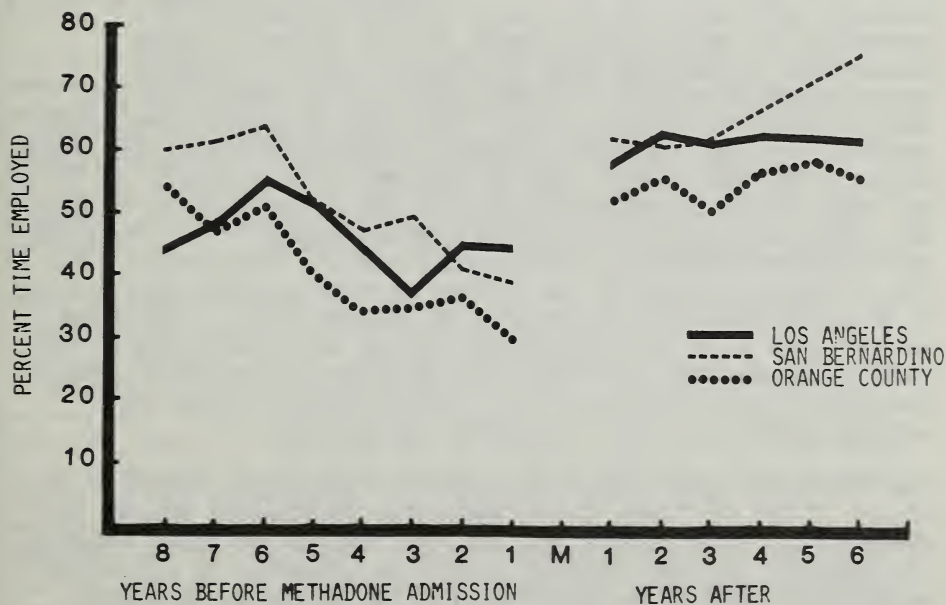


FIGURE 10  
Percent of Nonincarcerated Time Employed  
Los Angeles, San Bernardino, and Orange County  
Methadone Admissions

samples beginning 8 years prior to admission and extending 6 years after admission. Variables plotted are: daily narcotics use, crime involvement, and employment. Two features are noted. First, there is a distinct postmethadone entry improvement for these variables for all three programs. Second, while there are no consistent patterns of premethadone differences among the three programs, the postmethadone results tend to correspond to the proportions of time on methadone, which are strongly related to the policies of the three programs. Except for employment, Los Angeles county shows the greatest improvement, San Bernardino is next, and Orange County shows the least improvement. In general, Orange County measures are roughly equivalent to those of the other two programs in the premethadone period, but are substantially lower in the postmethadone entry period. These results remain after controlling for race and age. Also, a similar pattern is found for other variables not shown here: incarceration, arrest rate (particularly for property and drug-related crimes), and employment (McGlothlin and Anglin 1981b).

The Southern California findings provide substantial support for arguments that methadone maintenance programs are not as effective as they might be because of excessive regulation and a misplaced emphasis on minimizing dosage levels for moral or political reasons, rather than choosing a dosage appropriate to the legitimate needs of the client (Anglin and McGlothlin, in press).

#### CROSS-SECTION SAMPLES

Of the ten major samples described in table 1, the last four to be discussed differ from the first six in that they represent not admissions, but cross-section samples of their respective clinic populations. In addition, these four samples were not utilized to determine the effects of treatment entry, but to demonstrate the effects of the termination of entire treatment programs. One sample was from the only methadone program in Bakersfield, California, which closed in September 1976. For the purposes of the followup, all 99 (60 males and 39 females) who were enrolled in the clinic as of June 30, 1976, were included. The second sample, chosen to be comparable to the Bakersfield sample, was obtained from the Tulare clinic. The Tulare sampling population was defined as those enrolling after January 1, 1971, and still in the program as of June 30, 1976. A stratified sample of 59 males was selected, controlling for age and race so that these characteristics would match the Bakersfield male sample. Since there were only 29 females in the Tulare program who met the sampling criteria, the total population was included.

The third and fourth samples were drawn to assess the effects of the closure of the San Diego County methadone maintenance program (in December 1978) on client's drug use, and criminal and social behavior. The research was also designed to allow an evaluation of the overall costs and benefits of the substitution of fee-for-service methadone programs for those supported by public funds. A detailed report of the findings of this study is available elsewhere (Anglin et al. 1983).

The San Diego sample was drawn from the 561 enrolled in the County program as of September 30, 1978. The 50 Veterans Administration and 11 pregnant female clients who enrolled in the private programs, but whose fees were paid from public funds, were excluded. A random sample of 195 males was selected, and the total population of females (168 after exclusions) was included.

The comparison samples of 129 males and 131 females were selected from the combined populations of the continuing Orange, Riverside, and San Bernardino County programs. All persons selected were enrolled in their respective programs as of September 30, 1978. The comparison samples were matched for age and race, but otherwise were randomly drawn from the combined Orange, Riverside, and San Bernardino County programs.

#### Effects of Treatment Entry

The pre- to post- treatment increase in desirable outcomes previously shown for the early admissions to the Southern California methadone maintenance programs is duplicated by these four samples and specific results can be obtained from the original reports (McGlothlin and Anglin 1981a; Anglin et al. 1983). These replications, for samples drawn from other geographical regions and programs and representing different populations of addicts, provide strong confirmatory evidence for the general effectiveness of methadone maintenance in the treatment of chronic addiction.

#### Effects of Treatment Termination

The more important information from the Bakersfield and Tulare samples, and the San Diego and its comparison sample, partially answers the corollary question concerning the effects of program termination. To assess these effects, the date of discharge from the Bakersfield and San Diego programs just prior to their closing (September 1976, and December 1978, respectively) was used as the reference point. Dummy discharge dates of August 31, 1976, and October 1, 1978, were chosen for the respective comparison samples.

Table 2 compares the status and behavior of the Bakersfield and Tulare samples for the period from closure to interview. The data are displayed in terms of the percent of the sample involved in the status or behavior at some time during the interval. In addition, the mean percent time of the interval that behavior is involved is given for all measures except for mean number of arrests. The latter is the mean of the individual percentages, including those with zero time involved. Except for the incarceration item, percentages are based on the individual's nonincarcerated time during the interval. Arrest data were obtained from the California Criminal Investigation and Identification Record. Overall, the percentage of Bakersfield respondents arrested, incarcerated, or on parole or probation, is about twice that for Tulare. With respect to arrests, most of the difference is accounted for by drug and minor offenses (warrants for failure to appear in court, drunk in public, traffic violations resulting in arrest, and miscellaneous

misdemeanors). Since the Bakersfield police had an especially active narcotics task force in operation at the time, it is possible this was partially responsible for the high percentage arrested in the Bakersfield sample.

TABLE 2  
Status on Behavior from Methadone  
Program Closure to Interview (a)

Status or Behavior	Bakersfield N=94	Tulare N=83
In methadone maintenance (%)	12	53*
Mean % time	8	73*
Arrested on any charge (%) (b)	74	40*
Drug offenses	43	22*
Property crimes	14	12
Other	5	18*
Arrests per nonincarcerated person-year (c)	1.08	0.53
Incarcerated >30 days (%)	60	29*
Mean % time	18	13
On legal supervision (%)	63	28*
Mean % time	51	19*
Using illicit narcotics daily (%)	55	31*
Mean % time	26	12*
Abusing alcohol (%) (d)	56	36*
Mean % time	38	27
Dealing drugs (%)	53	31*
Mean % time	27	12*
Reporting property crime (%)	24	24
Mean % time	10	11
Employed (%)	74	76
Mean % time	43	54
Receiving welfare (%)	27	31
Mean % time	16	20

(a)With the exception of the incarceration item, all time percentages are based on nonincarcerated time.

(b)Arrest data are for the period from closure to April 1978.

(c)Significance tests not applicable.

(d)Alcohol abuse is defined as drinking at least seven drinks or equivalent during a six-hour period two or more times per week.

\*Differences between Bakersfield and Tulare samples significant (p<.05).

Probably the most relevant variables in table 2 are the number of Bakersfield clients who became readdicted to heroin, and the percent of time addicted. Slightly over one-half reported addiction at some time after termination. Of the eight Bakersfield respondents who transferred directly to another methadone program after the clinic closing, only one became readdicted to illicit narcotics. If these eight transfers are excluded, nearly 60% of the sample became readdicted subsequent to discharge. Overall, the mean nonincarcerated time addicted was 26%. Of the Tulare sample, only 26 (31%) reported readdiction, and the mean nonincarcerated time addicted was 12%. Of these 26, 22 were discharged from the methadone program prior to interview, and, for 13, all daily use was subsequent to discharge.



Alcohol abuse and drug dealing were substantially higher for the Bakersfield sample than for the Tulare samples. The percentage of those interviewed who reported engaging in property crime was similar in both groups. This is consistent with the arrest rates for property crime. Of the 19 Tulare clients reporting property crime, 14 had been discharged prior to interview. Seven reported that all property crime was subsequent to discharge.

Table 3 presents similar information for the San Diego and comparison sample. The results here must be interpreted with the knowledge that private methadone programs were made available in San Diego immediately after the closure of the County program. Some 40% of the County program clients transferred immediately to these programs. The cost to these clients was \$100 per month at this time. Table 3 shows the status, or behavior, for the period from program closure (or pseudo-closure for the comparison groups) up to the interview. Regarding the differences in the male samples, it is significant that the proportion of San Diego males arrested (60%) is 12% higher than the comparison group, a reversal of the criminal justice system involvement evident prior to methadone treatment entry (Anglin et al. 1983). This rise in arrest rates is primarily due to drug offenses. Increased criminal justice system contact is also indicated by the greater proportion (and percent time) of the San Diego sample under legal supervision.

The proportion of subjects using heroin daily and the percent time involved in daily use are similar for the San Diego and comparison samples. The greater involvement in dealing apparent in the pretreatment entry data is also evident in this period for San Diego males. The property crime data do not indicate any significant differences, but the reduced involvement for San Diego noted in the premethadone period continues to be apparent. Other than for percent time on methadone maintenance, the female samples do not differ for the postclosure period.

Generally, because of the higher percentage of clients who arranged for private methadone maintenance treatment, the clients terminated from the San Diego program appear not to be substantially different in behavior for the period from closure to interview from the comparison group, except in those areas where pretreatment differences existed. The exception to this is in the level of legal supervision, which is significantly higher for the San Diego males.

However, one of the most interesting items overall is the percent not incarcerated, not in treatment, and not "using" daily at the time of interview. If this is used as a measure of success, the San Diego clients tend to show poorer outcomes. When the male and female samples are combined, 47% of the comparison samples meet this criterion, while 37% of the San Diego sample do so. This difference achieves statistical significance ( $p < .05$ ) and is notable, given the overall better pretreatment characteristics of the San Diego samples. In addition, the disruption of the treatment process produced by the program's closure resulted in an increased personal cost of treatment which was beyond the means of some addicts. Further, it may have

TABLE 3  
Status on Behavior from Methadone  
Program Closure to Interview (b)

Status or behavior	Male		Female	
	San Diego N=178	Control N=118	San Diego N=153	Control N=118
Arrested on any charge (%) (b)	60*	48	55	52
Drug offenses	31*	18	30	29
Property crimes	28	25	22	25
Other	36	33	26	28
A rests per nonincarcerated person-year (bc)	.87	.61	.57	.63
Incarcerated >30 days (%)	34	31	20	24
Mean % time	10	9	6	5
On legal supervision (%)	48*	34	37	35
Mean % time	34*	24	27	22
On methadone maintenance	66*	88	67*	90
Mean % time	44	49	44	50
Using illicit narcotic daily (%)	55	62	54	54
Mean % time	24	20	22	18
Abusing alcohol (%) (d)	43	48	30	35
Mean % time	34	38	20	24
Dealing Drugs (%)	56	50	37	30
Mean % time	35*	22	17	11
Income from dealing (e)	4	2	2	1
Reporting property crime (%)	24	34	24	31
Mean % time	13	14	11	14
Crime days/year				
Income from property crime (e)	35	50	19	33
Employed (%)	77*	92	61	66
Mean % time	59	67	31	34
Receiving welfare (%)	27	25	61	52
Mean % time	16	13	44	37
No daily use, incarceration, or methadone maintenance	10*	1	8	4
No daily use or incarceration	35	28	40	40

(a)With the exception of the incarceration item, all time percentages are based on nonincarcerated time (C-I).

(b)Arrest data are for the period C to April 1981.

(c)Significance tests not applicable.

(d)Alcohol abuse is defined as drinking at least seven drinks or equivalent during a six-hour period two or more times per week.

(e)Income is in hundreds of dollars per nonincarcerated year.

\*Difference between San Diego and Control samples significant ( $p < .05$ ).

prolonged the addiction status for some who would otherwise have reduced their drug use and involvement in an addict lifestyle at a faster rate. For the 60% of the San Diego sample who did not transfer immediately to private programs, outcomes were much poorer than for the sample overall (Anglin et al. 1983).

It must be emphasized that the San Diego data represent the effects of program termination on enrolled clients who had had sufficient

exposure to methadone maintenance to determine its importance in their lives. At closure, they had some experiential basis to choose, if financially possible, to continue receiving treatment on a fee-for-service basis, unlike the Bakersfield terminated clients, who had no opportunity to do so. The private clinics thus had a pool of methadone-sophisticated individuals who either made a commitment to continue treatment (those who transferred without an interruption in treatment), or who subsequently chose to re-enter a treatment with which they were already familiar (the 76 who entered private methadone treatment after an interruption). An important question which cannot be answered by these data concerns the extent to which treatment entry by methadone-naive addicts is rejected or delayed because of the cost of private treatment. The San Diego and comparison samples show, respectively, 40% and 37% decreases in mean annual costs to society for their addiction after entering MM. The sharp declines in social costs associated with treatment entry are not realized, of course, until an addict enters treatment. To the extent that the payment requirements of private programs prevent or delay "new" addicts from entering treatment, or "old" addicts from re-entering, addiction periods are prolonged. Also, methadone-naive addicts may be less likely to enter private programs or once admitted, be less likely to stay, given the lower level of ancillary services private clinics can provide for the fee charged. The rehabilitation process, which may be enhanced by ancillary services, would also be slowed, and problem behaviors in clients expressed for a longer period of time. While it is by no means clear that counseling or other ancillary services are particularly effective in the rehabilitation of narcotic addicts (especially in light of the expense of these services), these issues must be given consideration. Consequently, the degree to which rejection or delay of treatment increases property crime and criminal justice system costs, which might have been reduced had no-cost treatment been available, is unanswerable at present. Presumably, the social and individual pressures which motivate entry to methadone maintenance treatment would have to be higher when treatment is \$100-\$150 per month than when it is at a nominal level. This is particularly true if an addict couple (where costs are doubled) seeks treatment.

## CONCLUSIONS AND DISCUSSION

The results of our evaluations indicate that both civil commitment (as represented by the California Civil Addict Program) and methadone maintenance effectively reduce drug use, dealing, income-generating crime, and arrests, and, to a lesser extent, increase employment and family responsibility. While civil commitment can be applied to any identified addict, methadone maintenance seems to appeal to a portion of the addict population that has not been amenable to other social intervention strategies. Although the majority of the socially beneficial improvements in behavior occur during treatment for both types of programs, there is evidence of some retention of improvement after treatment. Furthermore, the strength of the effect is probably related positively to time in treatment.

Program policy also seems to be an important element. The policies of the California Civil Addict Program seemed to produce better outcomes than did those employed by either the New York Civil Commitment Program, or the Federal Narcotic Addict Rehabilitation Act. The policies of the Los Angeles and San Bernardino methadone maintenance programs produced better outcomes than did those of Orange County. The higher dosage level and flexible policies regarding dose changes of the former programs produced more desirable outcomes than did the relatively low dose level and inflexible policies toward dose changes of the latter program. Further, termination of treatment, by program closure prior to a discharge point chosen by the client, generally produces a "bounce back" effect on behavior toward pretreatment levels.

Clearly, civil commitment was, and methadone maintenance is now, an important component of the treatment network for heroin addiction. Neither has produced the results anticipated by early researchers and policy planners, but disappointed expectations should not detract from their real and beneficial contribution to reducing the social and individual costs associated with addiction.

It is apparent that overall results are determined, in part, by program administration and policy, including dosage policies in the case of methadone maintenance, and that some improvement in the proportion of desirable outcomes would result from relatively simple administrative changes. High-dose, relatively flexible MM programs were more effective than low-dose, inflexible ones.

The elements of the Civil Addict Program which were most effective were the behavioral ones. First, the behavioral goal was clear and unambiguous: abstinence. (This goal may have been modified at the application level [parole officer supervision] to the more practical one of non-addicted use). Second, behavior was monitored by parole officers and urine testing. This relatively strict supervision typically revealed relapse to an addicted state soon after it had occurred (McGlothlin and Anglin 1977). Finally, if readdiction or other failure to meet parole requirements occurred, a return for a period of incarceration was immediate. Although this model of monitored behavior and punishment is not the best behavioral one for modifying undesirable behavior, it is effective when the period of monitoring is sufficiently long (three years at a minimum). It must also be noted that the program included elements of the better behavioral modification model of substituting more appropriate behaviors for undesirable ones, and reinforcing the substitutions. During the incarceration period, educational and vocational training were available and inpatients were encouraged to utilize them. During the outpatient phase, parole officers referred addicts under their supervision for further educational and vocational assistance, and also provided assistance with other social service agencies, such as medical care or public assistance.

Methadone maintenance can also be described as a behavioral modification model, but one with a basically different approach from civil commitment. Methadone maintenance provides addicts with a

substitute source of meeting their addiction needs, and negates the otherwise necessary involvement in income-generating activities (crime, dealing, and the sexual black market) and with other aspects of the addict lifestyle. Continued involvement in these activities often occurs, typically at a much reduced level, as addicts continue to generate a subsistence level of income or maintain a social involvement with active addicts. Some elements of the behavioral monitoring and punishment model exist in methadone maintenance programs, such as urine testing and disciplinary actions for inappropriate behavior. Simultaneously, more appropriate social behavior is encouraged via counseling and referral to vocational training, or to other social service resources.

Since the etiology of addiction has multiple components, and the population of heroin abusers is heterogeneous, a number of issues remain to be resolved. It is not yet clear what percentage of the total addict population would be amenable to these modalities or which treatment would be most beneficial at different points in the addiction process. Civil commitment may be more effective in reducing the frequency and duration of addicted periods and may promote an earlier "maturing out" for addicts with shorter addiction histories. Methadone maintenance may be the treatment of choice for long-term addicts who have not responded to other attempts at intervention. Additionally, it has not been established what the characteristics are of those most responsive to each, and if these characteristics change over time. Finally, the questions of the effective duration of treatment and what the ancillary rehabilitation components should be for each are still unanswered. While the treatments described are generally effective for substantial numbers of chronic addicts, it is unlikely that any major improvement in their outcomes, above those already demonstrated, can be achieved without answers to these questions.

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# Psychotherapeutic Approaches in the Treatment of Drug Abuse

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## ADVANCES IN PSYCHOTHERAPY RESEARCH

The effectiveness of talk therapy has been debated for decades. Some authors have contended that patients treated by psychotherapy are no better off than waiting list controls and that experienced therapists are no more effective than inexperienced ones. While there have been substantial numbers of studies which have found psychotherapy to be effective, there is agreement that the process of therapy has been difficult to control and the outcome has been exceedingly difficult to characterize and quantitate.

In recent years, however, the science of psychotherapy research has advanced considerably. Controlled studies now include better patient selection, use reliable diagnostic instruments, specify and identify therapies using manuals, and include valid, comprehensive outcome measures. These techniques have permitted a more precise analysis of the effects of psychotherapy and are leading to clearer concepts of the benefits and liabilities of psychotherapy.

Perhaps the most important development which has advanced psychotherapy research has been the improved classification of patients. The standard use of structured diagnostic interviews as well as standardized diagnostic criteria (e.g., RDC or DSM III) has permitted greater homogeneity in subject populations selected for study.

This in turn has allowed more fine-grained analysis of therapy effects by enabling patients with similar prognosis to be randomly assigned to control groups and competing treatments. Of course, current diagnostic instruments have not been in use long enough to have satisfactory validity testing by showing that they predict natural history or course of illness. Also, the diagnoses have not always shown stability over time. However, the instruments have shown excellent reliability in that multiple clinicians independently rating the same patient in the same time period have obtained similar results.

There have also been improvements in techniques used to investigate the process of psychotherapy through analysis of taped therapy sessions. Rating instruments have been developed to measure such

complex phenomena as patient-therapist interaction and the degree of direction versus support provided by the therapist. Although measurement of these phenomena is not easy, results have shown significant reliability when independent raters review the same sessions. Taped sessions have also permitted the verification of the specific type of therapy that is actually being administered. All of these techniques lead to greater objectivity and precision in controlled comparisons of types of psychotherapy.

### Psychotherapy in Addiction

Clinicians have noted the high degree of psychopathology displayed by opiate addicts, and that the use of illicit substances frequently occurs in response to psychiatric symptoms (Khantzian et al. 1974). In this context, addiction itself has been viewed as self-medication in an attempt to avoid depression, anxiety, and other psychiatric symptoms (Wurmser 1979). Recent studies indicate that the types of psychiatric problems observed in addicts are similar to illnesses which are often treated with psychotherapy when they occur in nonaddict populations (Rounsaville et al. 1982). Yet many workers both within and outside the addiction field have been pessimistic that professional psychotherapy could make a meaningful contribution to the treatment of the addicted patient (Bourne 1975; Karkus 1973). This opinion may originate from two lines of experience. First, there have been numerous attempts to do psychotherapy with addicts in private practice settings. Here, the patient's need for drugs and the acting out behaviors that develop around this need have commonly undermined the chance for a therapeutic relationship. Second, there has been the perception that all addicts are simply sociopaths, and that psychotherapy would not work for sociopathy. Part of this perception appears to have its roots in studies originating from the Addiction Research Center in Lexington, which may have involved particularly high levels of sociopathic behavior because the treatment setting was a Federal penitentiary.

However, there is some evidence to suggest that psychotherapy may be both practical and helpful with addicts if given under certain conditions. For example, the development of methadone maintenance treatment programs has provided a means to reduce much of the addict's intense, impulsive, and daily search for illicit substances. Stabilization with methadone has permitted the development of therapeutic, long-term relationships and thus, in theory at least, methadone programs might provide a medium in which psychotherapy could be employed effectively. In addition, the most recent studies on psychopathology in methadone-maintained patients showed that depression and not sociopathy is the most commonly diagnosed psychiatric disorder, though sociopathy is certainly well represented (Rounsaville et al. 1983). Further, about half of those patients with a diagnosis of sociopathy also have other psychiatric problems. Thus, there is reason to believe that psychotherapy may be capable of providing benefits to addicts, especially if it is delivered in a methadone treatment program.



## Review of Controlled Studies

No published studies on the effectiveness of psychotherapy with this population appear to have been done prior to 1970. The one exception was the work done by Nyswander et al. (1958) which was completed before the development of methadone treatment. In this study, professional psychotherapy was advertised as available and offered to any interested addicts in New York City. Only seventy people responded by contacting the clinic and only 13 of these became regularly engaged in therapy. These engaged patients had an average of 35 appointments with psychotherapists over a period of approximately 1 year. They were compared with a control group of 22 minimally treated patients who kept an average of 8 appointments. Although the treated patients showed more benefits than the minimally treated patients, the investigators decided that the role of psychotherapy in treating opiate addiction was minimal because so few patients applied for therapy and because only a small proportion of those who applied actually became engaged.

Since 1970 there have been other studies of psychotherapy with addicts, and most of these were done with methadone-treated patients. In eight of these studies, opiate-dependent patients were randomly assigned to psychotherapy or to a treatment control condition, usually drug counseling. Six of the studies (75%) showed a better outcome in the psychotherapy condition than in the control condition (table 1). The overall conclusion reached from a review of these few studies is that there is evidence to indicate that psychotherapy can be helpful for opiate-dependent patients. This type of review and conclusion is similar to that reached by Luborsky et al. and others in their overviews of many diverse psychotherapy studies of treatment efficacy for psychiatric patients in general (Luborsky et al. 1975; Smith et al. 1980; Andrews and Harvey 1981).

TABLE 1

### Controlled Studies of Psychotherapy with Addicts

<u>Authors</u>		<u>Psychotherapy Better</u>	<u>No Difference</u>
Willett	1973	x	
LaRosa et al.	1974	x	
Abrahms	1979	x	
Connett	1980		x
Resnick et al.	1981	x	
Stanton et al.	1982	x	
Rounsaville et al.	1983		x
Woody et al.	1983	x	

## SUGGESTIONS FOR FUTURE RESEARCH

### Practical Issues

Although the overall conclusions from both past studies and recent research indicate the benefits of psychotherapy, recent experience

with conducting controlled comparisons of different types of psychotherapy has highlighted several practical issues which must be considered in any future research. First, the research program should be considered a central part of the treatment program. Research studies encounter great difficulties when they are structured as add-ons to a busy treatment program. There is a natural tension between clinical and research staff which tends to be exploited in such situations. Ideally there should be an overlap between clinical and research staff and the principal investigator or one of the central figures in the research should also be the clinical director of the treatment program.

Another important issue in conducting psychotherapy outcome research in a substance abuse population is that the therapists, themselves should be at least part-time members of the treatment staff. Therapists who are paid by the hour and who give patients appointments in the private practice model are at a distinct disadvantage to those who are in the clinic for large blocks of time. The latter staff member/therapists are able to see patients who drop in at unscheduled hours. Substance abuse patients tend not to lead orderly, structured lives and thus they have a poor record of keeping appointments. While improved life organization may be an important goal of therapy, it is unrealistic to expect patients to have such independent and organized behavior and to keep appointments at the beginning of treatment.

#### Data Collection Instruments

In 1975 the National Institute on Drug Abuse held a drug treatment efficacy conference in Reston, Virginia. One of the facts which became obvious during this conference was the need for a generally agreed-upon measure of the severity of the addiction syndrome. It was clear that addiction was a multi-dimensional condition which could not be accurately described by measures taken in only one domain. The Addiction Severity Index (ASI) was developed by a group of clinical researchers to fill this need (McLellan et al. 1980). The ASI is a structured clinical interview which may be administered by a technician in 30-40 minutes, producing 10-point problem severity ratings in each of six areas commonly affected by addiction. The ASI has been found to be useful not only as a clinical tool for evaluating patients but also as a research instrument for categorizing patients and for measuring change in the six outcome areas following treatment. Future research comparing treatment outcomes should include a comprehensive evaluation instrument such as the ASI in order to adequately describe the patient population, to study the relationships between various areas of disability, and to provide a standardized and comprehensive assessment of treatment effects.

Another issue that is potentially important in designing and conducting research in this area is the presence of a psychiatric diagnosis and the measure of its severity. Patients all tend to have serious substance abuse problems at the time of admission to treatment, but there is great variability in the severity of their

psychiatric problems. Consequently, future research should focus on the severity of different types of psychopathology found among addicts. The Schedule for Affective Disorders and Schizophrenia-Lifetime (SADS-L) has been found to have a high degree of reliability in psychiatric populations including drug-abusing populations. Recently, however, it has been shown that even SADS-L diagnoses change significantly over time. Thus Rounsaville and colleagues (1981) found 6-month and 1-year repeat SADS-L diagnostic interviews to show marked changes from the lifetime diagnoses made at the initial evaluation. Future research, therefore, should be directed at a closer examination of this phenomenon. Perhaps it is the severity of psychiatric problems rather than the type of psychiatric problems which is the best predictor of treatment outcome.

Finally, psychotherapy outcome studies in substance abuse patients should utilize all of the sophisticated techniques of psychotherapy research which have been developed over the years. These include the use of treatment manuals, the use of regular supervision of therapists, the audio-taping of sessions, and the independent rating of sessions by external observers. Such techniques insure quality control and enable a more precise analysis of the factors leading to the observed results.

#### Natural History

An area of treatment research which has been neglected because of the great difficulties in doing such studies is that of the natural history of untreated addiction. Available data on the consequences of addiction are obtained from those individuals who apply for treatment. In the best studies, treatment dropouts are followed as well as those patients who remain in treatment. However, this does not provide us with information on those individuals who never apply for treatment. We do not know whether users who do not seek help are qualitatively different, or whether they are just in a preliminary stage which will eventually lead them to reach a stage requiring treatment.

#### Treatment Outcome Studies

There have now been three large-scale national studies of the treatment of drug abuse during the past 10 years. These are the Veterans Administration study (Lorei et al. 1978), the DARP study (see chapter in the volume), and the TOPS study (see chapter in this volume). All of these had a basically similar design in that they collected demographic data on patients at the time of admission to treatment, using a variety of social and psychological measures. They also included a series of intreatment measures and posttreatment measures. These large studies all provided useful information, and they were unanimous in showing substantial changes in those patients who remained in treatment, with longer treatment generally being correlated with better outcome. Individuals who dropped out of treatment early generally showed much less improvement over time. It is now appropriate to move from such large studies to more focused studies of particular patient types and particular treatments.

TABLE 2

SPECIFIC THERAPIESMAJOR MODALITIES

	Meth. Maint.	Detox.	Antagon.	Therapeutic Community
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 Psychotherapy

Cognitive  
Supportive-Expressive  
Behavioral  
Group  
Family

---

 Vocational Counseling
 

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## Psychoactive Medication

Anti-Depressant  
Anti-Manic  
Neuroleptic  
Anti-Anxiety

---

A typical patient may receive more than one major modality (columns), in any sequence, although usually only one at a time, and several specific therapies (rows) in any order and in different columns.

Future treatment outcome studies should include random assignment of homogeneous groups of patients to different treatment modalities. On the basis of past attempts, it seems apparent that random assignment between major treatment modalities such as therapeutic community and methadone maintenance is not feasible (Bale et al. 1980). In a well-designed, energetic attempt to accomplish such a random assignment, Bale and colleagues found that the majority of patients went to the modality which they desired rather than the one to which they had been randomly assigned. However, it is possible to accomplish random assignment within a major modality (table 2). Good examples of this are found in the two NIDA-sponsored psychotherapy outcome studies (Woody et al. 1983; Rounsaville et al. 1983) in which all patients received methadone maintenance, but patients were randomly assigned to different types of control or psychotherapy modalities.

## Genetic Studies

Another area for future data collection should include family history. Future studies of treatment efficacy should all include a standard assessment of family history, not only of substance abuse problems but also of other illnesses, particularly psychiatric illnesses. The important findings on genetic aspects of alcoholism make such studies in other areas of substance abuse imperative.

## Biological Factors

At the present time it is not feasible to collect biological measures in most treatment outcome studies. Longitudinal measures of endorphins in patients undergoing treatment, however, are currently being conducted in one center (O'Brien et al. 1982). Eventually, such biological measures may become an important component of diagnostic assessment and assignment to appropriate treatment.

## CONCLUSIONS

Drug abuse treatment has been extensively evaluated. It has been the subject of three large-scale studies and several focused, controlled studies. All of the large-scale followup studies and most of the controlled studies have found the treatment of drug abuse to produce substantial positive results, though no treatment has been developed that offers a high probability of cure. Future research should involve greater specificity. Patients should be categorized in more detail and randomly assigned to comparison groups within a large treatment modality. Recent work indicates that severity of psychopathology may be a reliably measured variable which is highly predictive of outcome.

The following specific recommendations should be considered by NIDA:

1. There should be an attempt to obtain some degree of consensus as to the appropriate battery of testing devices to be included in treatment outcome studies. Improved diagnosis has been very helpful in other areas of medicine and psychiatry, such as that of affective disorders. All treatment outcome studies should include a minimum battery of tests which should have at least one multi-dimensional measure such as the Addiction Severity Index. In addition, studies should include other more focused measures such as the SADS-L or a social functioning scale, depending on what questions are being asked in the study. Having a minimum battery for each study, however, would help to standardize treatment outcome studies in the field of substance abuse.
2. Future studies should be designed not so much to compare one treatment with another but rather to determine which patient best responds to which type of treatment. Although sequential treatments involving multiple interventions are difficult to study experimentally, clinical evidence indicates that such complex studies may be necessary. For example, some patients respond to the sequence of methadone maintenance, detoxification, and naltrexone,

with ongoing psychotherapy throughout (O'Brien et al. 1983). A diagram of the ways in which major treatment modalities interact with specific therapies is shown in table 2. Psychotherapy or chemotherapy may cut across major modalities.

Random assignment between major modalities may be impractical, but random assignment between specific therapies has been effective and informative. Thus future studies could utilize specific types of patients (e.g., high severity on ASI) in a specific major modality (e.g., methadone maintenance).

3. Many of the clinicians providing excellent treatment in the field of substance abuse are inexperienced in the methodology of treatment outcome studies. NIDA could provide a service to the field by making technical information available concerning minimal requirements of controlled treatment studies. This would include recommendations regarding the battery of tests to be used in describing the patient population and the scales to be used in measuring changes in response to treatment. It would also include the recommendation of publications describing treatment outcome methodology, such as that published by the National Academy of Sciences, Committee on Substance Abuse and Habitual Behavior (Guidelines for Studies in Substance Abuse Treatment, NAS, 1981).

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# Clinical Implications of Drug Abuse Treatment Outcome Research

Edward C. Senay, M.D.

The most important fact established by the scores of outcome studies conducted in the past 15 years is that drug abuse treatment works (NIDA 1982; Bray et al. 1982; Craddock et al. 1982; Simpson and Sells 1982; De Leon et al. 1982). The number and quality of studies carried out demonstrate, as well as can be realistically expected from any set of studies, that positive changes in client functioning occur during and after drug treatment. While there have been programs that have been poorly run and have encountered serious credibility problems, there can be little question that, from a public health and national point of view, many people have been helped by drug treatment.

There are numerous issues relating to treatment outcome, structure, process, and the changing nature of the drug abuse field and its treatment populations. I will limit the range of issues to be considered in this paper to a few of these, based on my impressions of existing treatment evaluation research and my experience as a clinician and program director involved in the treatment of drug dependency. The clinical implications presented here have largely to do with how and by whom treatment is delivered, and in what context; how do they affect treatment outcome, and what aspects should we study in future evaluations? Specifically, I wish to address the following areas: (1) the structure of treatment programming and treatment process as they presently exist; (2) the changing structure of treatment systems, and ways in which change should be guided; (3) qualifications, training, credentialing, licensing, and role definition for counselors in an emerging drug treatment system; (4) the need for special training for those outside the drug abuse field who are involved in service delivery/referral of drug abusers; (5) the need for both professionals and clients to better understand the nature of drug dependency and the variety of factors which have a bearing on outcomes; (6) the need for new strategies to improve retention; (7) improving clinic organization and operation; (8) the need to better disseminate research findings to the field; and (9) the need for special studies to better understand emerging drug use patterns, special needs of treatment populations, and promising interventions.

There are two distinct drug abuse treatment issues that have not been adequately addressed in evaluation efforts but are of crucial importance to the future success of drug treatment. One is structural; that is, how drug abuse treatment can be coordinated with existing service systems. For example, attention must be given to the relation between drug treatment and standard health care systems such as mental health and medical health care institutions and agencies. Drug abuse programs are supposed to have links with hospitals and other community-based service systems, but these links are generally honored more on paper than in practice. Drug clients are often too poor for the private care system and too well off for the public care system. This factor, combined with negative attitudes toward the problems of substance abuse, perpetuates parallel systems of care which, in effect, create second class care for many of the substance abusers' problems, especially their medical and psychiatric problems. Agencies charged with the future course of drug abuse treatment must closely examine the feasibility of linking drug treatment with hospitals in a meaningful way. In such experiments, hospital administrators will need training in administration of drug clinics located near or on hospital grounds. Hopefully, the establishment of Employee Assistance Programs in hospitals will help pave the way for acceptance of substance abuse treatment in hospital outpatient facilities. The possible benefits to patients far outweigh the costs (which are largely attributable to negative attitudes) of such programs.

The second issue of importance to the future success of treatment concerns process--how different treatment components or phases of treatment contribute to client outcome. What are the best modes of therapeutic interaction in individual or in small group situations? There are many process questions to be explored; how should we prioritize this research in relation to research on structural questions? My bias is that structural experiments are much more likely to pay off than process experiments. This judgment is based partially on a conclusion that resources are limited for either kind of exploration. Even a brief reading of process therapy research (Smith and Glass 1980; Garfield and Bergin 1978) should convince anyone that process research is extremely complicated and requires an extensive investment of time and resources. The report of patients' satisfaction with treatment summarized in the TOPS data (e.g., Bray et al. 1982) indicates that programs are doing well clinically. I believe that much more can be gained from structural changes in the treatment system.

It is far more important to train the staff of a community mental health center (CMHC) to accept and to use modern treatment methods for drug abusers than it is to explore counselor-patient exchanges in the current drug treatment network. CMHCs constitute a potentially important but underutilized resource for treating drug abuse clients. CMHCs treat many drug abusers, perhaps in greater numbers than are treated in the drug abuse treatment system, although most do not have drug treatment programs. Therefore, there is an urgent need to organize systematically and provide

training support for staff in CMHCs. Given current training and attitudes in psychiatry, social work, psychology, and nursing, it would be an error simply to charge the CMHCs with offering drug abuse treatment without offering training support. Research is needed to assess the capability of different CMHCs to deliver treatment to specific kinds of drug abusers, to identify the knowledge and skills required, and to determine the usefulness of different training methods and tools. The results of this research will help prepare the CMHCs for this role.

While the competition for third-party funds is inducing some CMHCs to add drug abuse services to those routinely provided, preliminary and fragmentary evidence suggests that this is far from common in CMHCs (Burke et al. unpublished). Moreover, the incentive of third-party payment may lead hospitals and CMHCs to be more selective. Thus, they are more likely to treat patients who have better social resources (e.g., the employed drug abuser) suggesting a better prognosis, while shifting the more problematic and needy client onto the free-standing drug abuse treatment programs. Yet these clients are likely to be in need of the range of services which are more readily available in CMHCs and hospitals. For example, the pregnant addict is in need of both drug treatment and prenatal health care, as well as other services, but she is far more likely to receive these services if they are provided in the same facility. In an integrated setting, she has the benefit of coordinated care and is spared unnecessary travel.

Research in the past decade has established that substance abuse populations have significant rates of psychiatric problems, i.e., personality disorders, depression, and phobic disorders (Bray et al. 1982; Rounsaville et al. 1983); and it is the exception rather than the rule that the schizophrenic addict gets appropriate care. The mental health system rejects the schizophrenic addict because he or she is an addict, while the drug abuse treatment system rejects the schizophrenic addict because he or she is schizophrenic. This is part of a larger mosaic which suggests a need to reevaluate the treatment system and develop policies and forward-looking leadership to bring about a better integration of services. The ideal model treatment system to explore would be one in which drug treatment facilities (therapeutic communities, methadone maintenance, and outpatient drug-free programs) are linked clinically and administratively to community-based service systems that provide job skills training, mental health and general health care, etc.

The outcome research of the past 15 years provides a solid basis for legitimizing and standardizing substance abuse treatment. An important next step is for single State agencies to take the lead in the licensing, credentialing, and accreditation of workers in the field. Hopefully, there would be coordination between the drug and alcohol fields in this regard. There is, of course, a need for a systematic training program through which substance abuse clinicians would receive training in different modalities. For example, clinicians might work in a therapeutic community for a

year, the following year in a methadone maintenance program, and the following year in a drug-free outpatient program. The purpose of this type of training would be to broaden the horizons and, consequently, the expertise of workers in the field. Such a cooperative program could also include clinical experiences which would span alcoholic and mental health treatment modalities as well as drug abuse treatment modalities. The training program might be modeled on the Career Teacher program, with the single State agencies providing the necessary administrative support. "Lead clinicians" could be attached to single State agencies to provide a much-needed link between clinical and administrative functions. Third-party payers would welcome such a training program. Once licensing standards and mechanisms for accreditation and credentialing are established, the drug treatment system will be in a better position to develop formal linkages with the general health care delivery system. If licensing and credentialing are established by State/government agencies with the cooperation of groups such as the Association of Labor and Management Administrators and Consultants on Alcoholism (ALMACA) and the National Association of Alcohol and Drug Abuse Directors (NASADAD), programs can become eligible for third-party payment and, as a result, have much-needed financial stability.

The multipurpose counselor who works with substance abusers should have a wide range of skills and should be experienced in particular clinical methods and techniques, i.e., conducting self-help groups like Alcoholics Anonymous (AA) and Narcotics Anonymous (NA). By being exposed to a variety of treatment modalities, drug clinicians will be seen as having particular skills and knowledge to offer rather than being identified with a particular service modality. A concerted effort should also be made to bring mainstream health and mental health professionals into this program for cross-training and certification, to improve their ability to provide appropriate treatment or referral, and to enhance the quality of services provided to drug abuse clients.

In addition to the need to legitimize the field by licensing, there is a need to upgrade the training of professionals and nonprofessionals in other fields who come into contact with drug abusers, including physicians and nurses. Prior to being permitted to work in a drug abuse program, all clinicians should undergo basic introductory training in addition to their residency. Counselors, social workers, psychologists, and others involved in substance abuse programs need similar training to get them out of the one-channel treatment mode and to realize that there are many more similarities than differences between treatment methods. It should be clear from the foregoing that the old division between alcohol and drugs no longer has much meaning clinically. As suggested above, efforts should be made to create a broad treatment role such as substance abuse counselor, chemical dependence specialist, or whatever term is most appropriate. The name is not as important as the ability to deliver a range of services for all problems that people create for themselves with intoxicants.

The treatment outcome research conducted in the past two decades has other important implications for clinical practice in the drug field. Evidence has been produced that just as substance abuse tends to become a career, so does substance abuse treatment; studies show that drug abusers tend to have multiple treatment episodes (Simpson and Sells 1982). There is some disjunction between this apparent reality and the perception of many, both inside and outside the treatment community. Many researchers, practitioners, and clinicians have assumed that treatment should occur once and should result in cure if it is to be termed effective. Substance abuse does not appear to be the kind of problem that makes this orientation pragmatic. When the community in which people live is so strongly pro-intoxication, it is not surprising that treated persons are recruited back into the drug lifestyle. Steps should be taken to orient people to the fact that, while treatment does not need to be applied forever, repeated episodes of treatment are probably necessary for most who develop serious problems with intoxicants. It should be accepted that repeated episodes are necessary for some and do not indicate failure on anyone's part, but merely reflect the nature of the problem and the culture in which we live.

If clinicians in the field are confused about such matters, imagine the plight of the patients or clients. They come to the treatment experience with the notion that they are seeking a cure, and they receive reinforcement for this unrealistic expectation. It makes better sense to acknowledge that some clients will experience repeated treatment episodes unless cultural and community conditions change dramatically. Treatment may be more or less intensive. For the more fortunate, it may only require one or a few episodes. But it is reasonable to expect that treatment of substance abuse is likely to require a sustained commitment, as is found in other treatment approaches. People in Alcoholics Anonymous are forever "recovering," not recovered. This concept applies to the treatment of most intoxicant-related problems.

Outcome research findings suggest that the longer we can retain people in treatment, the less pathologic the substance abuse career (National Institute on Drug Abuse 1981). Therefore, both access to treatment and reentry into treatment should be easy. To accomplish this objective, we should provide for keeping people in the treatment system when they are excluded from a particular element of that system. Outcome research indicates that administrative discharge is a frequent end to treatment episodes. Those clients who are administratively discharged from a treatment program but need further treatment often represent a loss to themselves and to society. To the extent that we can retain them in some treatment, albeit under changed circumstances, both the client and society are likely to benefit. The Illinois Treatment Program had considerable experience with this problem. Instead of excluding patients who had to be discharged from regular units because of threats of violence or misbehavior of some kind, clients were transferred to a "Losers Unit." As a result, the Illinois program was able to

maintain well over 50 percent of such patients in the treatment system. This was both to their advantage and society's (Senay 1981).

Another problem with the organization and delivery of treatment services in the drug field is scheduling. If programs were coordinated better, it would be possible to stagger admission times so that working addicts could obtain treatment in the early morning or late evening or whenever it would fit their working schedules. Weekend admissions could be increased by utilizing treatment units as part of a treatment system. There is a need to have studies comparing the success rates of communities that utilize isolated drug treatment units with communities that have implemented multimodality concepts. To date, most single State agencies have failed to view treatment units as a system, with the result that there is much duplication of weekend coverage and no specialization of treatment units to deal with special problems such as pregnancy or severe psychiatric problems. Consequently, there is an unnecessary duplication of services and loss of resources.

In future attempts to evaluate the treatment system, it will be important to focus more attention on the consumer. Not only can clients provide data on which aspects of treatment are efficacious, but they can also provide insight regarding the dynamics of treatment and the gaps in service.

Studies (McGlothlin 1979; Simpson and Sells 1982; Bray et al. 1982) show that crime rates of addicts drop substantially during and after treatment. Further research is needed on the kinds of crimes that decrease during treatment. The long-term success of the Treatment Alternatives to Street Crime efforts suggests that substantial gains can be made through collaborative efforts involving the criminal justice systems (National Institute of Law Enforcement and Criminal Justice 1979; Collins et al. 1982). The fact is that mandatory treatment has benefited both society and the addicts. So, efforts like those reported by Brill and Lieberman (1969), which examined the role of rational authority and coercion in treating addicted probationers, should be applied to addicts with significant criminal involvement. It would be useful to have more data on specific changes in criminal behavior to determine possible correlations with intervention strategies.

#### FUTURE RESEARCH

To understand the benefits of treatment to clients, researchers must look beyond the outcome measures that have been used thus far. Evaluators must consider the value inherent in the ideal concept of health or total well-being. If the addict survives heroin addiction to only to die of a carcinoma of the lung, is that a triumph? Treatment outcome data show that illicit drug use is reduced by treatment. However, while people in treatment may have decreased their use of illicit substances such as heroin or other non medically prescribed drugs, their use of legal

intoxicants sometimes increases substantially. Researchers at the University of Chicago (Senay et al. 1983) have just completed a 3-year study evaluating the effectiveness of comprehensive health programming. More specifically, the study was designed to assess the benefits of health-oriented counseling in which clients made a conscientious effort to improve their overall health through exercise and good eating habits and to confront their cigarette and/or marijuana smoking as well as their heroin addiction. New knowledge was gained through this study which can be applied to future attempts to create rational treatment. It was learned that many addicts share the general population's concerns about the health consequences of intoxicants such as alcohol and nicotine and can be persuaded to do something about them. Once again, the goals of treatment and, consequently, of outcome research need to be examined.

Studies are needed on the relative success or failure of programs as a function of program size. In the early days of building a treatment system in Illinois, large clinics were built on the basis of clinical experience (some had a census of 150 patients or more). It was felt that therapeutic communities should have no more than 50-75 clients in any one unit. It would be important to know from a therapeutic effectiveness point of view whether large clinics with 100 or more clients are as effective in rehabilitating drug clients as are smaller clinics. Because of implications for resource management, these research questions should be of particular interest to single State agencies.

The idea of a large mother clinic with satellite clinics for special needs (e.g., advanced patients who are working, have years of clean urines, and no arrests) also merits exploration. This kind of arrangement could spread resources more effectively, and perhaps enable programs to increase treatment slots or add specialized services.

There is a need for studies comparing public with private programs because clinical experience indicates final outcomes are different--probably because public and private populations are different. Ideally, of course, we should have a system in which private treatment efforts function in concert with public programming.

Old research questions regarding the usefulness of urinalysis have not been adequately answered. Many clinicians feel that urinalysis only confirms signs that are otherwise communicated. It is usually obvious to a clinician that a person is not doing well, and routine urines are not needed to confirm this. Havassy and Hall (1982) found no difference in outcome as a function of using clinical urinalysis. Such assays are expensive, and their exact role for clinical purposes should be studied. The role of urinalysis in treatment outcome studies is extremely important, but the focus on clinical use can be kept separate from the focus on evaluation use.

Researchers should also consider evaluating outreach, in conjunction with a multiservice system that includes services provided by drug, mental health, and health agencies in a coordinated, community-based effort. A variety of outreach strategies are available and it would be useful to know which are most (and least) effective for different treatment populations and service configurations.

Another aspect of the treatment process which needs study is the initial phase when the client makes the decision to seek treatment. Both Beck Depression Index and Hamilton Depression Scale scores have been found to be elevated at the point when a client comes into treatment and seem to recede whether people stay in treatment or leave. These scores also recede whether or not they receive treatment for depression (Dorus and Senay 1980). After decreasing, the scores are still elevated in comparison to norms. There is a need to understand these phenomena much better than we do. It would also be useful to study patients with high scores on the Beck or Hamilton Scales who are treated with standard psychiatric techniques. This is the kind of study which could be carried out more easily in the comprehensive treatment model previously suggested in this paper.

There are indications that both drug clients and drug treatment programs have been changing. Drug abuse patterns of 1983 are not the same as those of 1973, and the changes are significant for treatment. The drug abuser of 1983 is much more involved with multiple drugs, some of them relatively new (insofar as treatment is concerned), such as phencyclidine, cocaine, and marijuana. This produces serious clinical problems, with implications for management that are still unclear. The drug abuser of today is much younger, is more often female, and is more geographically mobile than the drug abuser of 1973. Retention in treatment is not as long as it was in the 1970s. In many communities, methadone treatment is not as acceptable as it once was, and consequently success rates are not as good as they once were. One can always expect a lag between institutional arrangements and the appearance of new social problems; this appears to be what has happened in the drug field. The problems are changing faster than the treatment approaches, so we need continued macro studies like DARP and TOPS as part of a coordinated strategy which employs a mix of macro studies and micro studies. The kinds of micro studies which would be an appropriate part of such a strategy are exemplified by that of Newman and Whitehill (1979) in their clinical study of methadone maintenance in Hong Kong.

People who work on line in the field need new knowledge. How should they respond to the new problems with cocaine free-basing or with young people who say that they are dependent upon marijuana but that this (drug use) is not a problem? Therapeutic communities and methadone maintenance, as well as AA, are having trouble responding to some of the contemporary substance abuse problems. People in the front lines need to know what others are learning about these problems.



The morale of workers in the field is obviously important to their clinical effectiveness; unfortunately the message that treatment--at least some of the classical forms of treatment such as therapeutic communities and methadone maintenance--has proven to be effective has not been adequately communicated to those in the field. Instead, they are exposed to many negative stories about methadone in the media. For example, a newspaper account which concluded that methadone led to reduced motivation in people was actually based on experimental animal studies. One would get the impression that methadone treatment did not work and that the drug is harmful to patients. This kind of false extrapolation from animal data to humans neglects the massive amount of data gathered in scores of evaluation studies involving humans. Counselors read these accounts in newspapers and ask questions about them, as do patients, and both are sometimes confused and concerned as a result.

We need to continue disseminating information to the field and to get across the message that: (1) we have built a treatment system that works for many people, and (2) we have to continue to build upon our knowledge and skill because clinical problems are changing. These messages, presented in the right way, could be an extremely important unifying agent, and hopefully would reduce factionalism in the field.

A growing number of studies (Willett 1973; Longwell et al. 1978; LaRosa et al. 1974) indicate that formal psychotherapy may have something to offer addicts. With the increasing recognition that many clients are multiply impaired, that treatment of addicts is frequently complicated by major depressive illness, alcoholism, and other disorders, it behooves those charged with treating addicts (and other drug abusers) to delineate and provide appropriate interventions. McLellan and his colleagues (1979) have had some degree of success in Philadelphia in improving outcomes for the severely disturbed client, and have specified some conditions under which the psychotherapeutic intervention is more effective. The use of talking therapies and pharmacological agents (e.g., anti-depressants) to improve outcomes and increase client retention (which may itself improve outcomes) should be further explored, systematically tested, and elaborated.

Findings from such studies as the DARP research (Simpson and Sells 1982) might lead some to suggest less emphasis on detoxification strategies and more emphasis on those treatment approaches that have proven to be effective and economical (e.g., methadone maintenance, residential). Detoxification programs have been less effective in achieving substantial lasting positive gains. But again, there is a tendency to regard separate treatments as unrelated one to the other. From a clinical point of view, we need detoxification programs to treat episodes, reduce the length and severity of "runs," and to attract addicts into the treatment system. Thus, it is important that the field appreciate the place of detoxification in a system of treatment service delivery.

Studies should be designed to evaluate the unique contributions that detoxification programs make rather than comparing detoxification results with the results of other treatment modalities.

Further studies on treatment outcomes for females are also in order for the future (Beschner et al. 1982). Micro studies of this type should be high on the evaluation agenda. Micro studies should also focus on issues such as take-home policy. Do restrictive policies have an impact on diversion beneficial enough to offset the decrease in acceptability of treatment? In a similar vein, a focus of other micro studies should be the question of what duration of poor performance programs will tolerate. For example, staff at the University of Chicago Clinic will not really "crack down" until a client has about a 6-month record of poor performance. At that point, improvements are expected or the patient is threatened and, in fact, discharged if performance does not change. Micro studies are also needed to determine whether clients who have a high frequency of past criminal behavior require special programming. Studies such as the DARP (Simpson and Sells 1982) have shown criminal background to be a powerful predictor of outcome.

Another area in which the drug abuse treatment system can benefit is from outpatient self-help groups. Unfortunately, AA and NA tend to be ideological about methadone. There is a need to develop and evaluate the effectiveness of self-help groups which do not discriminate against those taking medically prescribed drugs.

To summarize, future evaluation policy should continue macro studies such as DARP and TOPS with the provision that new clinical problems be included in the assessment, e.g., cocaine free-basers and marijuana-dependent patients. A supplementary set of micro studies would complement macro level studies. Studies at both levels should focus on a range of issues which the research of the past decade has indicated are important in treatment outcome, e.g., criminal history, psychiatric status, and the length of time poor progress in treatment should be tolerated. Policymakers should rank issues and then articulate a coherent policy of evaluation.

As was the case with the TOPS research, the consumer should continue to be included in evaluation studies. Finally, a decision should be made vis-a-vis structural studies vs. process studies. Perhaps a balance could be achieved, depending on resources. As I have indicated above, my bias is for a major allocation of treatment resources to structural studies.

Such an evaluation strategy should seek to resolve the many open questions I have described above, with specific attention given to improving treatment and increasing retention. As the activist orientation to treatment improvement research suggests, there is a need to make changes in the organization of drug abuse treatment, bringing it more into the mainstream of the health establishment, and to provide a better integration of services for our clients. Finally, we should redouble our efforts aimed at spreading the good news about drug abuse treatment effectiveness and the findings of

our considerable investment in treatment research to the drug abuse field, the medical and allied health professions, and to those decisionmakers who will determine the future shape of drug abuse treatment programming.

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# The State Perspective

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The meeting upon which this monograph is based presented a rare opportunity to convey the State's interests in a forum specifically designed to review treatment research efforts supported by the National Institute on Drug Abuse (NIDA). In part, NIDA's focal concerns overlap the State's concerns. NIDA is basically interested in utility, productivity, knowledge, and future directions; and so are the States. This paper has been written to review and consider the concerns and recommendations that States have regarding drug abuse treatment evaluation: dissemination, utilization, and research directions.

## DISSEMINATION

To understand the special interests of States regarding NIDA's treatment evaluation efforts, it was felt that it would be useful to solicit opinions and suggestions from a sample of States. This brief survey had two purposes: (1) to get a sense of how extensively NIDA treatment evaluation materials are used by States; and (2) to get suggestions for new materials and the best means of disseminating them.

Nine single State agencies, responsible for coordinating drug activities in their respective States, were contacted by telephone. The persons contacted were involved in planning, research, and evaluation for their State drug abuse agencies. By virtue of their work performed for a State agency, all of the respondents were aware of how the National Institute's evaluation materials were used in their respective States. Respondents were from the States of California, Colorado, Florida, Illinois, Louisiana, Massachusetts, Minnesota, New Jersey, and Washington.

The following six questions were asked of all respondents: (1) What materials from NIDA have you used to evaluate and assess treatment? (2) Specifically, have you used DARP and TOPS material? (3) How did NIDA disseminate these materials to you? (4) If used, which were the most useful? (5) What guidance might you give NIDA on the materials it develops for treatment evaluation? and, (6) As far as your State is concerned, should there be a narrow focus on modality?

Data were obtained from all nine States, and responses were tabulated to derive their range and their general thrust. The results are summarized below, question by question.

## RESULTS

Question #1. What materials from NIDA have you used to evaluate and assess treatment?

Responses ranged from reading and use of NIDA-sponsored outcome studies to no use of NIDA materials for evaluation or assessment of drug treatment. Two points emerged from the replies with particular force: (1) Many NIDA materials are used in monitoring, forming policy, treatment planning, and in treatment evaluation. DAWN, CODAP, surveys of high school students and household populations, monographs and technical reports, manuals, etc., are used extensively. (2) State agencies' responsibility for managing and maintaining drug agency budgets needed to support drug programs has grown significantly in the past 1 to 2 years, to the extent that keeping abreast of treatment evaluation and related findings is no longer as salient as that activity had been.

Question #2. Specifically, have you used treatment evaluation reports?

Responses ranged from little use of treatment evaluation reports and materials to thorough familiarity and extensive use. Some extensive use of DARP materials and a number of contacts with the principal investigators were reported. There was greater familiarity with DARP and its associated reports and materials than with other large-scale evaluation study reports.

Question #3. How did NIDA disseminate these materials to you?

This question was broadly interpreted by the respondents. As a result it is not evident precisely how those respondents who reported using evaluation reports and materials got them from NIDA. Some respondents suggested that a regular, personal contact within NIDA was helpful in getting various kinds of materials.

Virtually all respondents are on NIDA mailing lists. Some respondents said that, except for Clearinghouse materials, they have to call and shop around within NIDA to get specific items. Two of the respondents explicitly suggested that the dissemination system needed improvement.

Question #4. If used, which were most useful?

Those NIDA publications described as most useful were monographs involving outcome studies, such as the following:

- o Robins' study of post-Vietnam drug use by veterans of that war (1973);

- o Studies from the DARP followup research published by NIDA, such as the first-year posttreatment outcome monograph (Simpson et al. 1978); and
- o Nurco's study of heroin addiction over a 25-year period in Baltimore (1980).

Thus, NIDA treatment evaluation materials, including selected DARP items produced by NIDA, were considered by a majority of the respondents to be among the most useful NIDA materials. It is not clear from the replies, however, which DARP materials/reports were most useful, except for the mention of the first-year followup study.

Question #5. What guidance might you give NIDA on the materials it develops for treatment evaluation?

All of the respondents were able to offer suggestions about treatment evaluation materials that would be useful to them. Responses to this question were diverse. For example:

- o One respondent who is familiar with the various other followup studies felt that while, cumulatively, they clearly establish the efficacy of drug treatment, what is needed in the current fiscal climate are studies of the cost effectiveness of treatment.
- o A few of the respondents felt "how-to" manuals for conducting treatment evaluations would be useful, if they were geared to treatment administrators. In the same vein, it was suggested that a detailed set of case histories of "good" evaluations would provide models that could be adapted locally.
- o Another recommended resource was an edited bibliography of treatment studies which would be sent to program administrators.
- o Another class of suggestion concerned processing and packaging existing treatment evaluation data so that it could be more useful for program administrators and clinicians.
- o Some respondents felt that treatment evaluation data were not "accessible" and were somewhat difficult to interpret. Data presentations were seen to be sometimes directed to researchers rather than at a level useful to policymakers.
- o More studies of nonopiate abusers, especially cocaine abusers, were suggested, as were more studies of programs outside large metropolitan areas.

Question #6. As far as your State is concerned, should there be a narrow focus on modality?

- o A majority felt that the conventional focus on evaluating treatment modalities was acceptable and should be continued, but that there was little to be gained from cross-modality comparisons.
- o Some expressed a desire, however, for greater differentiation within modalities to capture the considerable variations in services, procedures, philosophy, etc., between programs of the same type.
- o There was, in addition, a strong minority view which held that modality-based data were only useful for administrative or regulatory purposes.
- o An alternative model asserts that NIDA and other researchers should work toward developing typologies of drug users, the stages in their careers, and under what circumstances specific interventions were effective (or ineffective) in favorably modifying those careers.

With respect to dissemination of treatment evaluation written reports, it was suggested that NIDA produce and routinely disseminate:

- o A listing of all treatment evaluation research projects funded by NIDA, and reports and articles generated by them; and
- o A digest or summary of the clinical, cost effectiveness, and methodological implications derived from the research NIDA supports.

A dissemination mechanism that NIDA might consider establishing would be twice- or three-times-a-year 1-day multiple city teleconferences with video. The presentations to be made would consist of summaries or digests of the results and implications of clinical and treatment evaluation projects. The audience in each city, perhaps 30 to 50 people, could comment on the research and question the presenter. Regional centers could be used, such as San Francisco, Los Angeles, Chicago, Dallas, Atlanta, Washington, D.C., and New York. Travel costs and time spent for the participants would be reduced and evaluation research results would be more accessible and more usable (in light of the digesting and short presentation format). Video tapes of the proceedings could also be made available for reshowing to selected State audiences, viz: policymakers, program administrators, and service providers. Another feature might be an overlay as the presenter speaks, showing where and to whom to write to obtain a full report.

A compendium of clinical experiences based on successful and unsuccessful management of common clinical problems that treatment



personnel encounter was recommended. Case studies written so as to show other clinicians how and how not to deal with a patient's avoidance of responsibility, resistance to group therapy, and refusal to get a job, as some examples, would be useful. Such compendia could be disseminated as clinical case manuals, each focused on a related set of clinical problems such as unemployment, alcohol use, etc. Dissemination by teleconferencing is also possible for this kind of information.

## UTILIZATION

Clearly related to the issue of dissemination is the usefulness of the evaluation materials that are disseminated to the States. As seen from the survey, a majority of the respondents wanted NIDA to know that its evaluation products were frequently difficult to interpret and to utilize directly. Recently, Davis and Salasin (1979), Deutschner and Gold (1979), Ianni and Orr (1979), Rossi (1979), Lawrence and Cook (1982), and Schneider (1982) have all noted the shift in emphasis away from the rigorous methodology in evaluation research to making evaluation findings useful to policymakers and program administrators. NIDA should, to the extent possible, move in this direction.

There has been a constant call to make evaluation products more utilizable, beginning with Weiss (1972), through Love (1982), and Strasser et al. (1983). Evaluation researchers as well as policymakers (Koretz 1982) and Congressmen (Doty 1982) recognize this. Unfortunately, historically there has been poor communication between evaluators and the consumers of evaluation. Havelock (1981) refers to it as a "dialogue among the hearing and speaking impaired." This lack of communication is based on several things: different kinds of training, different world views, different expectations and frames of reference, different constituencies, and different languages. The drug abuse research agency in New York has learned to bridge these differences over the past 15 years, but not without some pain and frustration. One key to achieving successful utilization of evaluation results lies in understanding the perceptions of policymakers. The following general statements (drawn loosely from Brandl 1980 and others) typify the policymaker's perceptions and frame of reference regarding evaluation, its uses, and its limitations.

1. Policymakers know that evaluations do not always yield "truth" (Rutman 1977); they sense there is some arbitrariness to all scientific work, especially evaluations. Policymakers are aware of holes in methodology, and they know that much of the logic in evaluation research rests on unverifiable assumptions. They believe that evaluations mix objective analysis with political judgments which politicians are better equipped to make on their own. For example, the evaluation research-produced contention that some methadone patients are not suited for abstinence is rejected by those

policymakers who believe methadone treatment simply substitutes one evil narcotic for another.

2. Policymakers note that evaluation almost always answers a somewhat different question than the policymakers are asking (Scanlon et al. 1977). For example, it may be true that methadone maintenance treatment reduces crime and improves social functioning, but how many addicts are really "cured"?
3. Policymakers have neither the time nor inclination to assess the quality of an evaluation (Carlson 1979; Messina 1982). If the basic finding is in agreement with their existing views, they will include the report in their armamentarium and wave it high in support of their argument. If the basic finding is antithetical to their views, they will reject it as biased, serving the opposition's cause, and/or shelve it. The quality, methodology, and skill used are irrelevant.
4. Partly in response to criticisms that evaluators did not come to grips with the "black box" of treatment, and that evaluators were too detached from real world problems, formative evaluation has emerged to occupy increasing numbers of evaluation researchers in recent years. This kind of evaluation determines what the program administration and staff want their program to do, observes the process of treatment, and assists the staff in modifying the program during the course of the evaluation as necessary. This often yields an insightful understanding of the treatment program as well as a mutually respectful partnership between evaluator and program. As the evaluator becomes directly involved in policymaking, however, he trades his independence for influence (Weiss and Bucuvalas 1980). Thus, the policymaker suspects the evaluator of advocacy, and is convinced that truth is no longer the evaluator's sole objective.
5. Policymakers believe that "truth" does not determine what is "right and proper." It may be true that drug abuse treatment clients receive better care and that more recover faster in smaller clinical caseloads, but that does not imply that small caseloads should be mandated, or paid for, by the State. Also, it may be true that substantial numbers of persons seeking drug abuse treatment have serious alcohol or psychological problems, but this does not mean that State or Federal agencies responsible for those problem areas should help pay for treatment.
6. Policymakers believe their job is to carry out their constituents' wishes, regardless of what evaluations show. If a methadone clinic is stirring up a neighborhood because of loitering, and the neighborhood brings their legislator in as a contingent ally, no positive evaluation of the

program, or of methadone in general, will be sufficient to overcome the larger "political" judgment. Likewise, the findings of evaluation research cannot reverse well-established, popular convictions which are usually upheld by policymakers. For example, methadone maintenance is still controversial in many communities, and this controversy finds expression through elected officials and the press, a fact which cannot be lost on policymakers and which evaluation itself cannot change.

7. Policymakers face myriad desiderata with any decision. An evaluation is only one contending judgment. The more complex the evaluation, the more jargon in the language, the more hidden or equivocated the conclusion, the more caveats in the preamble, the thicker the report, the more obscure the evaluator, the more sensitive the issue--the more apt the policymaker is to discard, ignore, or attack the evaluation. If he attacks it, the evaluator at least has a fighting chance to defend it, but usually the policymaker ignores the report, which is the worst possible outcome for the researcher.
8. Evaluators other than ourselves have recognized these perception problems and have suggested various solutions, such as the Evaluability Assessment (Kay 1978; Rutman 1980; Wholey, 1977, 1979, 1981), the Stakeholder Survey (Lawrence and Cook 1982), and the Developmental Evaluation Sequence (Love 1982).

Our experience in this regard comes from having served simultaneously in policymaking and evaluation roles. We have evolved seven rules for maximizing the utilization of evaluation research.

1. Establish a dialogue with the primary potential user--the policymaker (Cox 1977 and Kennedy 1978). Identify the critical questions and the critical audiences the user has. From the critical questions, develop a mission statement for the evaluation with which the policymaker can agree. With knowledge of the critical user's audiences, one can tailor the presentation of the findings appropriately. Remember that the policy implications of evaluation reports are singularly paramount, and forget the research paper style learned in graduate school--that style turns off policymakers immediately. Provide a clear-cut policy rationale for the document; researchers without a policy rationale are viewed by policymakers as self-aggrandizing. That is, the report will be perceived as serving no other purpose than to enhance the evaluator's resume.

2. Move swiftly to produce; only a researcher is patient enough to wait 2 or 3 years for an answer to a question. Long-term evaluation projects are tolerable only when short-term products are available. In addressing important questions, even partial answers are useful, and they create momentum for more support.
3. Accept incremental improvement; the search for perfection in evaluation is always fruitless. If one follows these rules and is patient, incremental improvement can be expected in data quality, data systems, definitions, levels of cooperation, and quality and quantity of staff.
4. Move with progressive refinement. This means that, initially, researchers must be willing to make crude or rough estimates. In order to respond swiftly to information requests, general questions must be divided into specific ones that can be answered rapidly by available data systems and staff.
5. Produce reports in four parts.
  - o The executive summary and recommendations must come first. They should be no longer than two pages (remember that policymakers receive 40 or more reports a day). They should cite the main points clearly in English, not jargon. These main points should respond to the user's critical questions and audiences, not necessarily the evaluator's. Avoid at all costs burying a critical point (i.e., the answer to a critical question) in the middle or the end of the document.
  - o The body of the report should be presented like a table of contents with summarizing headlines. If you include tables, they should be clearly understood by lay persons, and the numbers from table to table should never contradict each other. There is always someone who checks these numbers, and if the numbers do not agree, he or she will call to question the credibility of the entire document. If the data permit, include an analysis of the cost effectiveness of the program and include a cost effectiveness or cost benefit statement in the conclusions. Provide legislators with conclusions, not with recommendations unless they are asked for. Making recommendations and policies is the legislature's job.

Agency directors and senior administrators or advisors, on the other hand, may appreciate recommendations as well as conclusions.

- o Write conclusions in short paragraphs, preferably in "bullet" form. This saves wading through ponderous rhetoric to find the conclusions, and they can then be used immediately by decisionmakers as announcements for press purposes. Recommendations should also be "bulleted" and incorporated into the Executive Summary. Prepare the bullets with the "stand-alone principle," using oversimplified statements which can be quoted in legislative or cabinet-level debates, or in interviews with the public media. They should be written for multimedia impact.
  - o Put all technical material in the appendix. This includes all technical and complex tables, technical caveats, statistical procedures, cost-benefit calculations, and methodological details. Such material is useful to other researchers, but disconcerting and annoying to policymakers.
6. Organize the results by political jurisdiction before presenting them by census tract. Policymakers cannot relate to problem estimates for areas that have no political reality. This implies that the evaluator has an obligation to understand something about the political dynamics of the questions he or she investigates. In the same light, NIDA evaluation or epidemiological products that cannot be related to a single State have very limited use (if any) for the State. And, if the potential audience includes legislators, the evaluator should try to present data by assembly and senatorial districts. Remember that politicians always have the needs of their constituents uppermost in their minds.
7. The purpose of evaluation and social science research in government can easily be remembered as three "P"s and three "A"s:
- o It should be PRACTICAL--that is, it should ANSWER the critical questions.
  - o It should be PECUNIARY--that is, it should provide ACCOUNTABILITY for critical dollars.
  - o It should be POLITICAL--that is, it should recommend ACTION for critical audiences.

## RESEARCH DIRECTIONS

The section that follows is a potpourri of treatment evaluation ideas. They are viewed as guidelines and seeds for thought and possible future directions. The ideas are the fruit of brainstorming among evaluation researchers and, as such, vary in levels of development.

1. Numerous studies have shown that time in treatment is correlated with outcome. Yet, there has been very little research on factors that might lead to higher retention rates among programs. If the specific factors leading to higher retention rates could be identified, this might lead to relatively inexpensive methods of retaining clients in treatment and significantly improving treatment outcomes. Conversely, cases of those persons who leave programs prematurely as a result of external pressures could be studied; then researchers could identify the pressures and other problems patients are likely to encounter and develop program elements to counteract them.
2. We also need to study ways of recruiting detoxified and untreated drug users. Research has shown that there are many such people who are not motivated to enter treatment. Using ethnographic techniques, factors that breed resistance to treatment and those that foster entry can be identified. Then, in turn, specific methods can be tested to overcome the source of resistance and augment those factors that boost entry.
3. Usually treatment is thought of as restricted to within the program; external influences on treatment outcome are rarely considered in any type of treatment planning, though some attention recently has been given to family therapy. There is a need for more studies of how external influences have an impact on treatment outcomes. In particular, studies of external economic influences are needed. The illicit drug business is very large and profitable. Thus part of the difficulty in getting clients to stop using illicit drugs is undoubtedly due to the economic forces involved in the illicit drug business, but the exact nature and impact of these forces have never been studied. Our ability to counter these external limitations on treatment effectiveness will remain limited if we do not increase our understanding of them. We also need to explore what external factors encourage or result in patient amenability and cooperation during treatment, and then develop techniques to enhance them.
4. Examining the drug abuse treatment evaluation literature, one is struck by the emphasis on fine tuning of existing

modalities. With the exception (in recent years) of antagonist therapy, no new methods for the treatment of drug abusers have been explored. In the late seventies, efforts were made to investigate techniques such as acupuncture (for detoxification), hypnosis, biofeedback, transcendental meditation, nutrition therapy, transactional analysis, and other "therapies" in vogue at that time. These studies should be reviewed systematically and findings communicated, together with limitations on their use, to evaluation audiences.

5. There is a need for studies on the effectiveness of short-term early intervention treatment for young drug users. In particular, holistic approaches dealing with a broad range of services to reach a broad range of problems among such youth need investigation. These methods, if effective, would add low-cost treatment alternatives to dealing with the bulk of the youthful drug users in the country. Similarly, studies are needed of the effectiveness of employee assistance programs. These programs have been initiated and are being advocated all over the country, but remain unevaluated.
6. Studies of treatment failure using case study techniques could inform the process of treatment. And, in this vein, case studies of persons who ceased drug use without treatment, such as those conducted by Waldorf (1983), could be equally informative. Recent studies of weight loss and smoking cessation show that self-treatment efforts may be much more effective than previously thought. But the research on self-treatment for illicit drug use is relatively scarce, and mostly confined to heroin use. Much can potentially be learned from studies of how people stop using a variety of illicit drugs without formal treatment. Such studies should also examine why some self-treatment efforts fail, and whether the factors that lead self-treatment to fail are repeated in formal treatment programs.
7. Formal drug treatment programs almost exclusively proclaim abstinence as the only suitable goal for treatment of illicit drug abuse. This goal is rarely achieved in any single episode of treatment, which suggests two lines of treatment evaluation research. First, the effects of multiple episodes of treatment need to be coherently explicated. Second, the utility of less-than-total abstinence goals should be explored. It is quite likely that many clients and staff actually share such treatment goals, but there is almost no information on how frequently this occurs and what effect it has on treatment processes and outcomes.

8. One concern expressed repeatedly has been that treatment is largely a "black box." The people, events, and interactions subsumed by labels such as "therapy," "counseling," "referral for services," and "remediation" remain largely undescribed in drug programs. As a result, variations in delivery and efficacy, which are crucial to treatment evaluation, are also unspecified. NIDA should support research on these processes as they occur in programs--call it applied microsociology or preevaluative research. To us, knowledge of these processes appears essential for understanding and improving treatment.
9. The current treatment paradigms were originally designed for the treatment of opiate abusers. The patients we often encounter now, however, consist of cocaine, marijuana, and polydrug abusers. These persons are not necessarily suited to opiate treatment, and much of the "fine tuned" research done on opiate users needs to be repeated for them.
10. NIDA should consider competitive awards for new treatment approaches. For such an award, NIDA would issue a problem analysis focusing on a specific problem such as the cocaine user, the psychotic self-medicator, the young heavy marijuana/alcohol user, or prescription drug misusers, and request treatment evaluators to submit proposals of new techniques tailored to the specific population.
11. In the same vein, NIDA could encourage grants assessing the effectiveness of acupuncture in treatment of heroin addiction, for example, and receive highly focused evaluation proposals for specific methods.
12. A serious problem affecting all treatment effectiveness is the social stigma which current drug users and former drug users bear. Studies into stigma management and methods for changing the public's and employers' attitudes are needed. Just as important, if more general, are studies of how to build community support for treatment. Antagonistic communities prevent treatment programs from opening and inhibit their operation. Supportive communities, on the other hand, can facilitate job placement and social reintegration, while encouraging treatment recruitment and cooperation.
13. NIDA should consider studies of systematic shifts in service delivery, such as private physician/pharmacy dispensation of methadone, and short-term intensive residential treatment for marijuana or cocaine abusers.
14. NIDA should consider an evaluation of a vocational program designed for the drug abusers who have never worked. This



program could provide for testing, guidance, training, guaranteed placement, and followup support during employment, plus pay a profit based on success as an incentive to the training company, which would also provide followup support.

15. NIDA should fund a meta-evaluation of all treatment evaluation research performed over the last 25 years. This compendium of treatment effectiveness should be classified by treatment method and outcome. It would be the state-of-the-art document for all treatment.
16. NIDA should fund studies of treatment effectiveness for the following special populations:
  - o The multiply handicapped, e.g., deaf drug abusers
  - o Violent drug abusers
  - o New immigrant groups, e.g., Southeast Asians, Cubans, Haitians
  - o Abuser families
  - o Alcoholic drug abusers
  - o Athletes, musicians, entertainers and other professional groups

#### SUMMARY

Our survey showed that State agencies make use of NIDA materials of all sorts, including NIDA treatment evaluation materials. A majority of the respondents indicated that NIDA treatment evaluation materials were among the most useful of its products; most frequently mentioned was DARP, then Nurco's and Robins' work, and TOPS. That DARP was most frequently mentioned is not a contradiction, since the responses were stated in a general sense, not in terms of a specific report or material.

In the past 1 to 2 years, many State drug abuse agency budgets have been substantially reduced due to declines in Federal funding. As a result, treatment evaluation reports and related materials are viewed somewhat differently than they were in the past. The fiscal climate in various States may thus be another factor contributing to the greater familiarity and reported use of reports such as DAWN, CODAP, and case management and monitoring manuals published by NIDA.

A number of suggestions were made about the kinds of evaluation materials needed by States. It was generally agreed that attempts should be made to produce treatment evaluation findings/new knowledge in a format where it would be more accessible to administrators (e.g., "how-to" manuals, evaluation case studies,

dissemination of treatment evaluation bibliographies) and should assist in making existing treatment evaluation results more accessible (divide results for modalities into subtypes, provide data on the effectiveness of specific interventions with specific conditions, diversify the settings of programs in which evaluations are done, etc.). The theme of these various suggestions is to make evaluations more available, usable, and specific, especially now in view of the reduced ability of many States to carry on their own evaluation activities.

The general sense of the respondents regarding dissemination was that right now, in view of other problems such as the financial crunch, NIDA's system of distribution cannot be a salient concern. Nevertheless, from a State perspective, NIDA's dissemination of treatment evaluation materials is particularly important in the light of the paucity of resources States have to conduct their own research. Thus, having access to NIDA's usable evaluation data is all the more crucial to improving service delivery and its cost effectiveness. Another factor to bear in mind at the present time is the absence of opportunities to share evaluation results at national conferences which formerly were, of course, major mechanisms for formal dissemination.

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# A Treatment Evaluation Agenda: Discussion and Recommendations

Frank M. Tims, Ph.D., and Sherry Holland, M.S.

## INTRODUCTION

This review, as stated in the Introduction to this volume, had two purposes: (1) to assess critically the state of the art of treatment evaluation--i.e., where we are in our knowledge regarding treatment evaluation and treatment effectiveness, and (2) to assess the most important needs of the field, both in terms of research areas or questions and methodological issues which should be resolved. A panel of nationally recognized experts was convened to review the state of the art and to develop a body of recommendations for future research.

In response to these questions, a number of themes emerged. Prominent among these were (1) the need for a synthesis of prior research, (2) the opportunities afforded by existing data bases for secondary analysis, and (3) development of an agenda for new research, including continuing examination of drug abuse treatment systems and populations, studies of treatment process, assessment of treatment for nonopioid abuse, continued study of drug abuse careers, and studies of untreated drug abuse populations. Also of concern was the need to disseminate treatment research findings widely, both to researchers in drug and alcoholism treatment, and to treatment providers.

## DISCUSSION

To return to the first question of this review, "What do we know today about the effectiveness of drug abuse treatment?", today's state of knowledge represents a stage of an evolutionary sequence, as we confirm treatment effectiveness in general terms, and turn to the task of being more specific about how and for whom what aspects of treatment are effective. Our answers have tended to raise many more questions. The field has now developed a knowledge base from which to apply increasingly sophisticated methodologies to treatment studies. Because the drug abuse evaluation field may be characterized as evolving, both in terms of knowledge advancement and methodological aspects, and involving a multiplicity of

disciplines, our present knowledge contains not only gaps but also inconsistencies. Resolving the apparent conflicts in research findings represents a major task for treatment evaluation at this point. Two principal approaches which make use of existing data are suggested: A synthesis of existing studies, and secondary analysis of available treatment research data.

### Synthesis of Existing Studies

Although the evidence for the effectiveness of drug abuse treatment is impressive, there are questions, problems and issues of interpretation that remain to be clarified. A systematic review and synthesis of treatment outcome studies which has as its major objective the clarification and, where possible, resolution of treatment issues could be of great benefit to the field: Such a synthesis should provide an estimate of the magnitude of treatment effects across studies. In addition, a cross-study summary of observed relationships among client, treatment, and outcome variables might usefully distinguish among client variables associated with positive outcomes irrespective of type/setting of services, treatment variables associated with positive outcomes irrespective of client variables, and client-treatment interactions. The research synthesis should include a critical examination of methodologies used, with a view to identifying the strongest studies and sources of inconsistency in findings.

### Secondary Analysis and Modification of Existing Studies

Other possible sources of new knowledge and clarification of research findings may be found in existing data bases and ongoing studies. During the past decade, a large and rich body of data has been developed in a variety of drug treatment studies. With regard to resolving or clarifying apparently conflicting results of different studies, consideration should be given to reexamining the analytic approaches and, where possible, reanalyzing study data itself. Several issues meriting reanalysis were identified, including the interdependence of outcome behaviors; the ability of psychopathology to predict outcomes; the nature of the relationship between time in program and changes in criterion behaviors; and the relationship between severity of drug and alcohol dependence and posttreatment outcomes.

Some investigators have found relatively low correlations among posttreatment outcome behaviors (e.g., drug use, employment, criminality). This finding suggests that treatment procedures may cause positive changes in some behaviors and not others. Thus the question of client-treatment matching--"What procedures work best for what types of clients"--needs more thorough consideration of the nature and degree of the anticipated changes.

Pretreatment severity of psychopathology is associated with poorer posttreatment outcomes in some studies but not in others. Some programs screen out psychiatrically disturbed clients. This restriction on within-program variance may place a ceiling on the correlation between psychopathology and outcome. A "state-trait"

problem may also exist. Clients with long-term psychiatric disorders may have outcomes which differ from those whose symptomatology is a transient condition associated with the circumstances of their treatment admission. Data for these two subgroups should be examined separately.

Several major drug treatment evaluations have found that time in program predicts posttreatment outcomes. This has provided critical support for the treatment hypothesis in studies without controlled assignment. However, in the TOPS data time in program and posttreatment outcomes are weakly related. Such an apparent conflict with previous research findings suggests that the data be carefully examined and reanalyzed to explain or resolve the lack of a significant time-in-treatment effect. Possible explanation of no such finding would include differences in the populations being studied, and measurement artifacts which tended to obscure differences in response to treatment between subgroups.

Unpublished analyses of TOPS data conducted since this review have controlled for selected covariates and found what appears to be a time-in-treatment effect, but the meaning of the effect is not yet clear. The time-in-treatment effect, which is among the most significant findings in treatment evaluation, needs to be further explored, clarified, and tested.

Gaps in knowledge may also be at least partially filled by secondary analysis of existing data, and adding or reorienting questions in ongoing research to capture variables not previously identified, to address questions which have emerged as our state of knowledge has evolved. For example, new insights into the importance of the role of psychopathology in determining treatment outcome suggest that prospective studies should have more detailed information in this area on clients entering treatment, to enable appropriate classification into subgroups for which outcomes may be differentiated. The TOPS has obtained some limited depression indicators for clients at admission, as well as alcohol use and pretreatment criminal involvement. It may be possible retrospectively to develop life history data in future followup interviews which could be used to develop subgroups of clients who had been violent, frequently depressed, or who may have been dysfunctional in particular areas of life with problems in childhood, adolescence, and/or adulthood. Family health history could also provide valuable data.

#### Future Treatment Assessment Research

Turning to the shape of future studies, it is clear that some periodic large-scale or medium-scale followup studies will be needed at intervals, (1) to assess the changing nature of treatment populations and services, (2) to provide sufficiently large data bases on contemporary client samples for multivariate analysis, and (3) to provide replications where needed to confirm or clarify previous research findings. Such prospective studies probably should not reasonably be expected to involve the large numbers of clients tracked in DARP and TOPS, although the

information available on the client population base should be sufficient to permit appropriate sampling. These studies should be effectively coordinated with smaller, program-based studies. The program-based studies, in which investigators affiliated with treatment programs or larger treatment organizations are involved, could address highly focused questions related to treatment process and outcome issues.

Large-scale studies have made a point of comparing outcomes across modalities. The general pattern of findings suggests that few meaningful differences are likely to be found in outcomes among opioid addicts in methadone maintenance, residential drug-free, and outpatient drug-free treatment that are not either a function of client differences or of time in treatment. Future studies can more appropriately examine how given treatments work for well-defined subgroups of clients within a particular modality or program. When we better understand the dynamics of treatment services or therapies for such well-defined client types, the assignment of those clients to a particular regimen can be made more meaningful. A convincing case has been made for the usefulness of controlled studies to test hypotheses regarding client-treatment matchings. While attempts to randomly assign well-defined, homogeneous client pools to modalities have been frustrated by clients crossing over to their treatment of choice, random assignment within modalities to service configurations and to more satisfactory control groups has proved feasible.

Whether we speak of medium-scale prospective studies or program-based studies, naturalistic or controlled, such studies must include better client data at admission. In particular, a set of core variables and measures whose validity and reliability are reasonably well established should be developed and used in all future treatment evaluation studies which involve clients entering treatment. Such "minimum research criteria" would provide the well-defined subgroups of clients for better analysis and would enable comparability across studies, which has been problematic in the past. The minimum research criteria would include specified information on drug and alcohol use over specific pretreatment intervals, employment, criminal history, and treatment history, as well as measures of psychopathology and social functioning. Consideration should also be given to including family history data, with particular reference to health and genetic variables.

There are, of course, a number of existing instruments which could be used. These would have to be carefully evaluated and a set chosen which would be methodologically satisfactory, appropriate to key research issues, and which would not pose insurmountable obstacles to acceptance by clinicians who would, in many cases, be asked to use them. The practical issues of acceptance of the measures at the clinical level must be considered. Greater involvement of clinicians, perhaps in co-principal investigator roles, may result in increased willingness to use the prescribed instruments.



Treatment process studies are clearly needed. While the DARP, TOPS, and other studies have recognized the eventual questions of process, research priorities have focused largely on outcome studies, with process very much the junior partner. As suggested above, program-based studies offer the best opportunities for testing specific variations in services or therapies, although it is also possible that larger scale, externally based research efforts could make contributions in this area, given appropriate program involvement and an imaginative design. One much-needed process study would test approaches for increasing retention by modifying program content in the critical early weeks of treatment. For therapeutic communities, especially, where attrition is high in the first 4 - 6 weeks, it is suggested that while some clients are not suited to a high-intensity treatment involving confrontation, others who drop out of treatment could benefit, given proper support and clarification of treatment content. Such a program of treatment improvement research is activist in orientation, and may provide an important contribution to our understanding of the role retention plays in improving outcomes.

Research on treatment effectiveness for those clients who are primarily involved with nonopioid drugs has been largely neglected. Because the community-based treatment system was developed to deal primarily with opioid addiction, and because so many researchers and clinicians have had a primary interest in opioid addiction, this area has received most attention. Attempts to deal with nonopioid abusers in the DARP and TOPS have been problematic, owing largely to difficulties in conceptualization and having insufficient numbers of clients involved primarily with particular nonopioid abuse patterns. The lack of treatment evaluation research focused on clear subtypes in well-defined treatments suggests a need for special efforts to develop such studies.

In treatment evaluation studies which have attempted to impose quasi-experimental research designs on treatment systems, controls or comparison groups have always been a problem. The usual compromise is to take some group which is presumably similar to the treated groups but which has not itself received treatment, and consider them a "no treatment comparison group." The argument against using these "no treatment" comparison groups is that they usually turn out to be something else. They drop out of treatment but many of them re-enter treatment. Analysis of the DARP data suggests that, while as a group they have less satisfactory outcomes, substantial numbers of these comparison group subjects are doing well at followup.

It is also widely recognized that substantial numbers of addicts carry on long addiction careers, remaining outside the treatment system. We do not know how similar or different these untreated addicts are from those who make their way into treatment, but existing natural history studies are hampered by the fact they have only involved addicts captured by the treatment system or the criminal justice system. Natural history studies should, of

course, include studies of clients from treatment populations such as DARP and TOPS over the longer term, but there should also be efforts to ascertain what happens to people who leave treatment after only minimal contact, and those who are never treated. The "minimal treatment" and "never treated" groups could be explored from the standpoint of what the natural history is in the absence of treatment, as well as what the potential is for bringing these individuals into treatment by various strategies.

In any event, this expanded version of the natural history of drug abuse/addiction would be useful in enabling us to understand important aspects of drug abuse careers. It is also important to note that our concern with natural history over the longer term has understandably been with opioid addiction, since these are the client populations which have been around long enough to mature sufficiently for such studies. The large client populations never addicted to opioids, but involved primarily in the various nonopioid abuse patterns, should be similarly followed up over time. An important first step in this regard is to examine closely the data already available from such studies as DARP and TOPS. This provides the opportunity to begin accumulating a knowledge base with regard to defining the different subgroups, characterizing them in terms of client background characteristics, their treatment and/or criminal histories, and exploring outcome patterns over whatever time period is available in the data. Subsequent long-term followups could be initiated once the nature and availability of suitable samples are assessed.

#### Dissemination

A variety of research consumers have a need for current information on treatment research findings, including researchers, clinicians, administrators, and others who are charged with the responsibility for decisions affecting treatment programming. NIDA's treatment research dissemination strategy has included publication of scientific reports and monographs, as well as short summaries of research findings, both in Clinical Research Notes and as individual publications. These have been directed to clinicians, researchers, and a more general audience. Dissemination of these publications has been through the National Clearinghouse for Drug Abuse Information (NCDAI) and through other distribution channels. Several of the participants in this review suggested that, in addition to continuing to provide such timely summaries, NIDA explore alternative strategies for using research findings to stimulate appropriate programmatic change.

#### RECOMMENDATIONS

The following recommendations resulted from the review. While consensus was evident on most of these points, the order of presentation does not imply priority. Specifically, it was

recommended that research be supported and encouraged in the following areas:

- o A comprehensive review and synthesis of findings from existing studies. This should include comparison across studies and, where appropriate, reanalysis of data bases, to resolve apparent inconsistencies in the overall pattern of findings in the literature.
- o Continued large- to medium-scale studies such as DARP and TOPS, coordinated with smaller scale studies to extend and clarify findings.
- o Program-based studies to investigate treatment process, clarify program differences, and foster utilization of findings by treatment programs.
- o Controlled studies designed to produce reliable data on outcomes for specific treatment interventions, e.g., long-term vs. short-term programs, brief therapy vs. routine treatment, aftercare initiatives vs. no such services.
- o Studies evaluating treatment for nonopioid clients.
- o Natural history studies to better characterize and understand the complex of events and influences experienced by drug abusers before, during, and after their periods of abuse, including those for primarily nonopioid abusers.
- o Studies evaluating psychodiagnostic and other strategies for subclassifying clients and exploring more appropriate client-treatment matching. The question of "what treatment works best for what type of client" has not been adequately addressed. Studies should focus on better data for classifying clients (e.g., biologic, psychiatric, and psychosocial, as well as drug use patterns) to permit studies of matching.
- o Studies of the feasibility of using standardized instrumentation in treatment evaluation. NIDA should support and encourage the use of standardized research criteria in order to identify client subpopulations and develop useful measures of client change during treatment.
- o Systematic studies of interventions (outreach strategies) with untreated drug abusers and of interventions with early dropouts from treatment to determine the most appropriate forms of treatment for these populations.
- o In addition, it was recommended that NIDA continue its efforts to provide up-to-date summaries of research findings (such as the DARP summary and review papers

published by the Institute) and disseminate these to the field in a timely manner. Study should be made of different strategies for using research findings to guide programmatic change.

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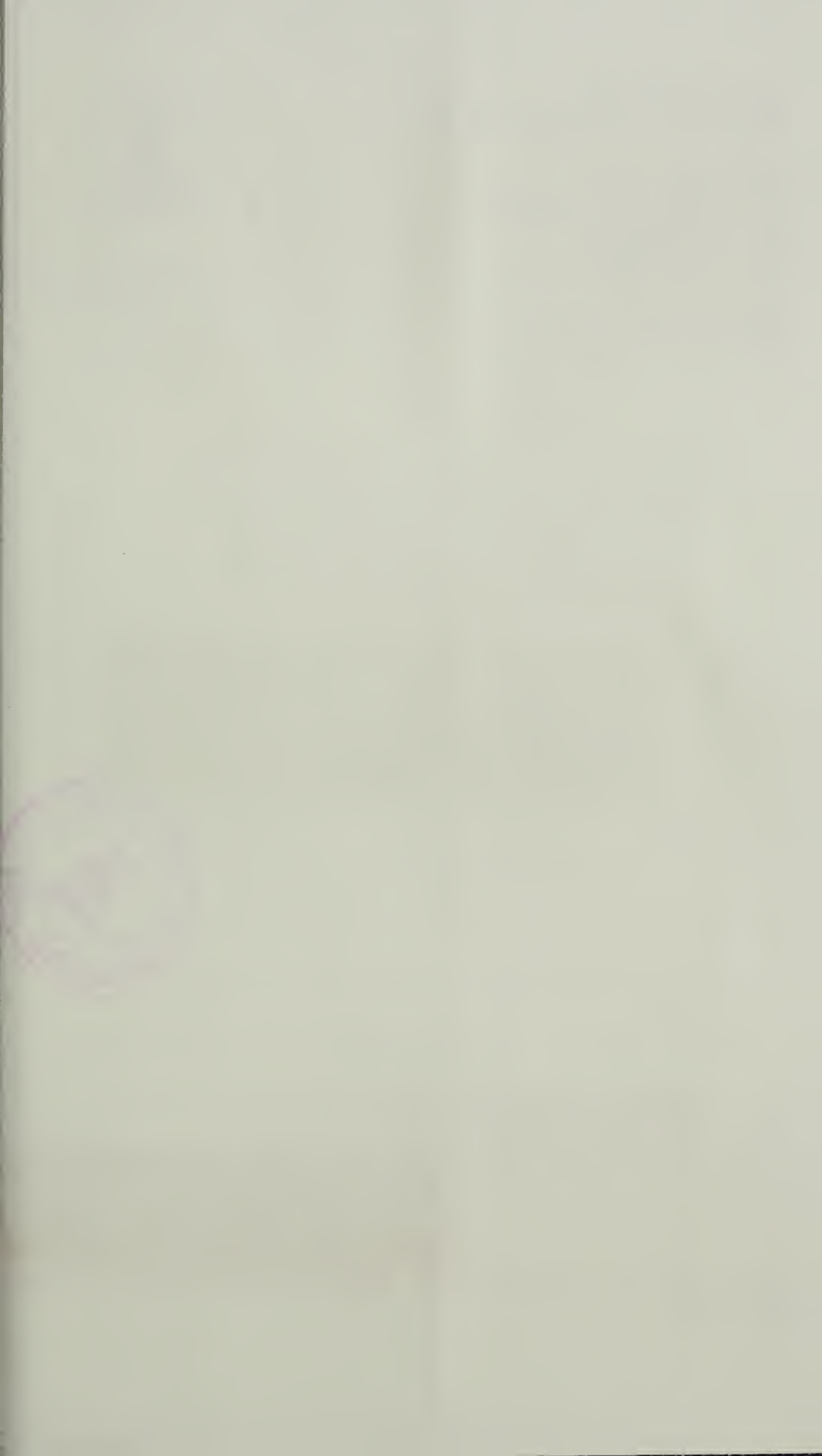
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50 COCAINE: PHARMACOLOGY, EFFECTS, AND TREATMENT OF ABUSE. John Grabowski, Ph.D., ed. Content ranges from an introductory overview through neuropharmacology, pharmacology, animal and human behavioral pharmacology, patterns of use in the natural environment of cocaine users, treatment, through commentary on societal perceptions of use.



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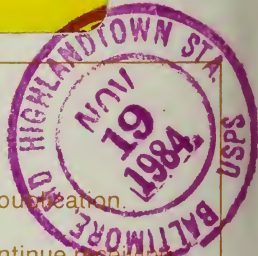
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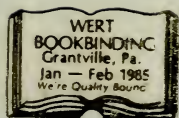




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