

Alcohol and Other Drug Treatment Effectiveness

A Review of State Outcome Studies

1.0 EXECUTIVE SUMMARY

The National Association of State Alcohol and Drug Abuse Directors, Inc. (NASADAD) conducted a qualitative Meta-analysis of State outcome studies to determine the effectiveness of alcohol and drug abuse treatment across states primarily as measured by the four effectiveness measures included in the 2000 Substance Abuse Prevention and Treatment Block Grant Application (SAPT) and two additional performance indicators. In addition to reviewing and comparing the data from individual studies among treatment effectiveness indicator areas, other relevant variables that impact treatment were identified and reviewed and other related studies were examined. A total of 53 studies in 24 states, mostly completed between 1994 to 1999, were selected for inclusion in the final analysis. This report is divided into four main sections: Introduction and Background, Qualitative Meta-analysis, Results of Analysis of State Outcome Study Data, and Discussion of Treatment Effectiveness. Seven Appendices are attached to the end of this report that provide more detailed documentation of the study effort and the results.

In the Introduction and Background section, the need to evaluate the effectiveness of alcohol and drug treatment programs in a systematic manner across the States is explained. Individual State studies have been conducted and results reported but the results have seldom been collected and analyzed in a comparative format. There is a need to increase the availability of treatment outcome data that are comparable across studies so that the effectiveness of treatment can be more accurately understood. The Substance Abuse and Mental Health Services Administration's (SAMHSA) Center for Substance Abuse Treatment CSAT), in partnership with other Federal and State Agencies, supported this effort.

Efforts to measure the performance of the publicly supported treatment system has promoted a system-level shift in focus from periodic, discrete, and dissimilar studies of treatment outcomes to a few standardized measures of client status changes across a State's entire treatment population. This latter approach is typified by the inclusion of four consensus derived measures of treatment effectiveness. In the FY 2000 State Substance Abuse Prevention and Treatment Block Grant Applications, States were asked to report, on a voluntary basis, on client 1) Alcohol and Other Drug (AOD) use, 2) employment status, 3) criminal justice involvement, and 4) living arrangement as indicators of treatment outcome.

Recognizing and appreciating the natural diversity in focus and scope of these small State studies, NASADAD conducted a systematic examination of State-based treatment outcome studies in order to determine trends and commonalities of the State study results. NASADAD's qualitative Meta-analysis of treatment outcome studies provides a basis for better understanding of treatment effects and outcomes across the States. A data collection instrument was designed to capture detailed information on the State outcome studies conducted mostly between 1994 and 1999 with respect to treatment effectiveness indicator areas, operational definitions of measures and measures used to define them, other treatment indicators, and other variables that impact

treatment. Results of individual studies were compiled, synthesized, compared, and analyzed to determine commonalities and trends in the data in order to determine the effectiveness of treatment as measured by the performance indicators.

The next section, Qualitative Meta-analysis, describes the approach NASADAD used to evaluate the effectiveness of treatment based on a review of the data from the individual State studies. To accomplish this effort, the AOD Directors were sent letters and a data collection instrument designed to elicit data that would be useful in performing a review of treatment effectiveness. Information was collected on study design, client population, type of services, data sources, measures and data collection points, and key findings and outcomes. Studies were selected based on the following criteria: relevant findings, appropriate methodology, study completion, and inclusion of measures of effectiveness. A total of 66 treatment outcome studies were considered for inclusion but only 53 studies from 24 States were retained for further analysis.

Data from the selected studies were catalogued, analyzed, and compared on the basis of the four major treatment indicator areas, additional treatment indicator areas, and other variables that impact treatment outcome. A qualitative Meta-analysis was performed that permitted the data to be synthesized, reorganized, and compared across research studies. In this study, the term "Meta-analysis" means an overview and comparison of the results of selected state outcome studies. This approach is well suited for identifying trends and commonalities of data among studies and summarizing the results of related studies that are not directly comparable. The more formal quantitative Meta-analysis that involves using a statistical approach to summarize and compare results across multiple studies to determine the strength of effect size based on comparable performance measures was not applied.

The Results of Analysis of State Outcome Study Data section presents and summarizes the results of the Meta-analysis. Various operational definitions of performance measures under the treatment effectiveness indicator areas and the different treatment evaluation periods (follow-up) were identified and compared. Findings on the four core treatment effectiveness indicators, two additional treatment effectiveness indicators, and other variables that impact treatment as well as other studies related to measurement of treatment effectiveness in State outcome studies are described. Results are displayed in a tabular format in the body of the report and in the appendices.

Measures for the four core indicator areas and two additional indicator areas were found in the State outcome study data. The four major indicator areas of treatment effectiveness reported were 1) AOD Use, 2) Employment Status, 3) Criminal Justice Involvement, and 4) Living Arrangement. Also, two other treatment effectiveness indicators were used often. They were 5) Physical Health and 6) Mental Health and Family/Social Functioning. The States used different operational definitions to describe the measures and used different treatment evaluation periods (measurement points) to record results.

Other important variables that impact treatment were identified in the studies and the data from these studies were analyzed. The variables are: the length of stay in treatment, participation in aftercare services and peer support group activities, the target population (criminal justice

activity and youth), the type of service (outpatient versus residential), and treatment modality (e.g. methadone maintenance).

Other studies were reviewed that reported information on treatment effectiveness from different perspectives. One set of studies attempted to evaluate the effectiveness of treatment in terms of cost offsets. A few individual provider studies reported results that are similar to the State outcome studies. Data were submitted from TOPPS-I (Treatment Outcomes and Performance Pilot Studies) that were designed to address specific issues encountered in improving statewide treatment program accountability

In the final section, Discussion of Treatment Effectiveness, the results of the Meta-analysis are discussed. Results, commonalities among studies, and major trends are presented. In general, it was found that alcohol and drug use decreased, employment increased, and criminal justice involvement decreased at various points after treatment. Few studies reported living arrangement as a measure and when it was reported the definitions were not comparable and results for this indicator area were inconclusive. Also, it was found that physical health, mental health, and family/social functioning improved considerably after treatment.

The analysis of other types of outcome variables supported the position that treatment is effective. In cost offset studies, the positive effects of treatment are described in terms of decreased costs and/or increased savings in other areas. Several studies demonstrated that treatment outcome improves as the length of stay increases and as the client participates in aftercare services or peer support groups. A few studies demonstrated the relationships between target populations and treatment effectiveness for clients in the criminal and juvenile justice system and for youth in residential programs. There was modest improvement in abstinence after treatment in both of these types of programs. However, it should be noted that some youth oriented programs are more grounded in harm reduction goals than adult programs that stress abstinence as the primary treatment objective. Other studies reviewed compared treatment effectiveness based on treatment setting (e.g. outpatient vs. residential) and treatment modality (e.g. methadone maintenance). The studies consistently showed that treatment works regardless of setting or modality.

The method of conducting a qualitative Meta-analysis of State outcome studies in this study proved to be fruitful for determining the effectiveness of treatment based on the performance measures under treatment effectiveness indicator areas. Although there are numerous operational definitions for measures under each of the indicator areas, and there is much variability in the duration of the evaluation (follow-up) period after treatment, results were positive. It can be concluded that treatment is effective regardless of the measure, the indicator area, or the time frame applied.

2.0 INTRODUCTION AND BACKGROUND

There is a need to increase the availability of treatment outcome data that are comparable across states so that the effectiveness of treatment can be more accurately assessed and understood. The Substance Abuse and Mental Health Services Administration's (SAMHSA) Center for Substance

Abuse Treatment (CSAT) is supporting efforts to increase the availability of treatment outcomes data to meet this need.

Efforts to measure the performance of the publicly supported treatment system promote a systems-level shift in focus away from periodic, discrete, and dissimilar studies of treatment outcomes to a few standardized measures of client status changes across a State's entire treatment population. This latter approach is typified by the inclusion of four consensus derived measures of treatment effectiveness in the FY 2000 State Substance Abuse Prevention and Treatment Block Grant Application. States have been asked to report on the following four major performance measures, on a voluntary basis, on client 1) AOD Use, 2) Employment Status, 3) Criminal Justice Involvement, and 4) Living Arrangement.

The National Association of State Alcohol and Drug Abuse Directors (NASADAD) has played a significant role in the development of these four effectiveness measures and other performance measures through State-level information exchange on treatment measures and operational definitions of the measures. Over the past two years State Directors have actively participated in NASADAD's "Delphi process," a formal iterative discussion and feedback process using Internet technology.

The need for a system of evaluation of treatment effectiveness has long been recognized. But constrictions on funding balanced against increasing demand for treatment have historically forced State Alcohol and Other Drug Agencies to make the hard choice of concentrating resources on the provision of the highest quality of treatment possible rather than the broad measurement of treatment outcomes. Nevertheless, many States have been able to negotiate a compromise between these conflicting demands on limited resources and conduct a substantial number of treatment outcome studies on relatively small samples of AOD clients. Such studies offer the following advantages:

- less burden on providers
- limited costs
- the collection of very detailed information to satisfy specific intents (e.g., clinical evaluation, cost offset studies, impact on use of other systems, etc.)
- the collection of data from clients at differing periods of time following discharge

The findings of these studies have been noted on an individual basis, but they have seldom been collected and analyzed in a comparative format. Some of the advantages of specifically targeted outcome studies based on relatively small samples turn to disadvantages in attempts to aggregate the results across studies and States into generalizable conclusions. In other words, the studies are generally not comparable in terms of target populations, purpose, timeframes, or other methodological issues.

Recognizing and appreciating the natural diversity in focus and scope of these small State studies, NASADAD conducted a systematic examination of State-based treatment outcome studies. This qualitative analysis has revealed some general trends and commonalities that can help to buttress the voluntary reporting in the Block Grant Application. It has provided a synthesis of State conducted outcome studies that will help determine if the admission-to-

discharge results reported in the State's Block Grant Applications are consistent with the longer term outcomes found in more formal research. Also, the outcome studies add to the quality improvement function of the performance measurement system.

Many treatment providers and administrators fully expect the comparable, systems-level treatment outcome data to show that substance abuse treatment makes a difference. Consistent with its mission to support the development of effective alcohol and other drug abuse treatment programs throughout the several States and Territories, NASADAD collected and synthesized information on treatment outcome studies that States have completed since 1994. The results of the NASADAD study help to lay the groundwork for determining the effectiveness of state alcohol and drug treatment as measured by four major treatment effectiveness indicators that include multiple performance measures for each indicator. Additionally, other indicators and variables will be evaluated to determine their impact on treatment as well.

3.0 QUALITATIVE META-ANALYSIS

A qualitative Meta-analysis was conducted that permitted the data to be synthesized, reorganized, analyzed, and compared across individual research studies. Data from the selected studies were evaluated on the basis of the four major treatment indicator areas, additional treatment indicator areas, and other variables that could impact the outcome of treatment. In this study, the term "Meta-analysis" means an overview and comparison of the results of selected State outcome studies. The more formal and quantitative Meta-analysis that involves using a statistical approach to summarize and compare results across multiple studies to determine the strength of effect size based on more directly comparable performance measures was not applied. Although there is an increased level of specificity and comparability of results associated with the more formal quantitative approach, there is still disagreement about the appropriateness and application of this technique. The application of the qualitative method to evaluate State outcome data enables underlying relationships between variables to be identified and trends to be detected.

3.1 Data Collection Process

Special attention was given to studies that included measures of the four major indicator areas States are currently being requested to report on in the FY 2000 State Substance Abuse Prevention and Treatment Block Grant Application. The indicators are use of alcohol and other drugs, employment status, involvement in the criminal justice system, and living arrangements (homeless, fixed residence). Additionally, NASADAD reviewed State outcome studies for information on the differences found between clients leaving treatment early and those who complete treatment. Other factors which the States have considered important to track, such as physical health, were inventoried and examined as well. Also, special attention was given to the area of health care cost offset data.

NASADAD's data collection effort was a secondary analysis of existing data in that the data under review had already been collected in earlier studies. The States had conducted studies over different time frames, using different definitions and differing methodologies. NASADAD's

goal was to capture not only the variations among the States and studies but also the common themes and similar findings across studies. The data sources included but were not limited to treatment outcomes research available to the State AOD Agencies, FY 2000 State Block Grant Applications, State Alcohol and Drug Abuse Profiles (SADAP) produced annually by NASADAD on all reporting States and Territories, and Treatment Outcomes and Performance Pilot Studies (TOPPS I & II). Furthermore, NASADAD consulted with State AOD Directors about their ability to “mine” State management information systems (MIS) for AOD and related systems’ data bases for information useful in identifying treatment effectiveness and how such information could benefit the AOD system at the State and substate levels.

3.2 Data Collection Instrument

Appendix A contains the data collection instrument that was developed to collect data from the States on treatment outcome data. It was designed to capture detailed information on State outcome studies, study design, the four major treatment effectiveness indicator areas, operational definitions of performance measures under these four indicator areas, performance measures, and other treatment effectiveness indicators and variables that impact treatment. The data collection instrument and a letter with instructions for completing the survey were prepared.

3.3 Procedure

Step 1: Collect and Compile Treatment Outcome Studies from the States

In collecting information on treatment outcomes studies in the past five years, NASADAD’s approach was to be as inclusive as possible in order to gain a broad understanding of what the States are doing at the local level to measure treatment outcomes. This effort included treatment outcome studies completed between 1994 and 1999, including alcohol, drug, and alcohol/drug treatment but not prevention. The data collection instrument and a letter with instructions for completing the survey were sent to each of the State’s AOD Directors. As NASADAD received responses, results from State outcome studies were compiled and inventoried. Letters were followed up by phone calls as needed in an attempt to achieve a high participation rate.

Step 2: Review and Select Studies for Further Analysis

The criteria for evaluating the studies were established. The relevance of the study findings, the appropriateness of the study’s methodology, the quality of its results, and the suitability for inclusion in a Meta-analysis scheme was examined. Studies were selected for further analysis based on these criteria.

Step 3: Compare and Analyze the Selected Outcome Studies

Selected studies were reviewed and data from these studies were grouped, and compared according to treatment effectiveness indicators, performance measures and associated operational definitions, evaluation periods, and other important variables that might have an impact on treatment. The results were organized and summarized in multiple tables and appendices.

4.0 RESULTS OF ANALYSIS OF STATE OUTCOME STUDY DATA

This section summarizes the findings of the Meta-analysis and addresses the following:

- Operational definitions of the outcome measures across the States
- Findings on the four effectiveness performance indicator areas: AOD use, employment status, criminal justice involvement, and living arrangement
- Other outcomes measured by the States
- Other treatment factors associated with State outcomes

A total of 66 treatment outcome studies from 24 States were considered for inclusion. Fifty-three studies were included while 13 studies were dropped because they did not meet the selection criteria for inclusion. (Three 2000 studies were included but Maryland reported data published in 1997. The other two 2000 studies were from Massachusetts and New Jersey and were included because they were available and included relevant data). The studies excluded from further analysis had not yet been completed, such as the TOPPS-II studies, or contained only demographic and other descriptive data, with no measures of effectiveness cited. After a careful review of each selected study, the information was organized into a consistent format for ease of comparison and included the following categories:

- Study Design
- Client Population
- Type of Services
- Data Sources
- Measures and Data Collection Points
- Key Findings and Outcomes

Appendix B presents individual text summary reports of 37 out of 53 State selected outcome studies across 21 States. Appendix C displays the 53 selected State treatment outcome studies across 24 States summarized in a tabular format by State, client population, type of service, and the four major outcome measures.

4.1 Operational Definitions of Treatment Outcome Measures

States have been working together through their National Association of State Alcohol and Drug Abuse Directors (NASADAD) to build consensus on the best indicator areas for assessing treatment performance in terms of effectiveness, efficiency, and structure. States are concerned not only with measuring specific client outcomes but also with issues of quality assurance, cost effectiveness, and other factors such as length of stay and appropriateness of treatment modality which affect treatment effectiveness within their systems.

Over the past several years there has been general agreement that 1) AOD Use, 2) Employment Status, 3) Criminal Justice Involvement, and 4) Living Arrangement are powerful indicators of treatment effectiveness. Despite consensus on the four indicator areas, the methods of defining them vary widely within States and across States. Appendix D provides a comparative table of the operational definitions of the major indicators of treatment performance used in the treatment

outcome studies reported by the State's definitions of the four consensually derived outcome indicators used in the 2000 Substance Abuse Prevention and Treatment Block Grant Application.

4.2 Evaluation Period of Treatment Effectiveness

The SAPT Block Grant Application request that States report on client changes from admission to discharge on client alcohol and other drug use, employment status, criminal activity, and living arrangements. Currently, the federal reporting is done through comparison of an admissions cohort with a discharge cohort rather than by matching client administration and discharge records. Each client entering treatment is assigned a value at admission to be compared to the assigned value at discharge. Reporting would include all clients in treatment at the beginning of the reporting year plus all clients admitted during the reporting year - only for those clients who were also discharged as having completed treatment during the reporting year.

Client follow-up once the clients have left the system is difficult, time-consuming and expensive. Nevertheless, it is important to know what lasting impact the treatment experience may have for different client populations and for different treatment modalities.

State studies follow-up from 3 months to 10 years after treatment. The States' outcome studies conducted on populations within the publicly funded AOD treatment system provide some opportunity for more extended follow-up and for matching client records. This may help to reduce and offset some of the limitations inherent in the current federal reporting based on comparisons of admission cohorts and discharge cohorts. These studies can be expected to supplement the federal reporting of admission to discharge findings, which are admittedly less powerful and compelling than results obtained once the client leaves the structured treatment environment.

Almost two-thirds of the 53 studies in the Meta-analysis included client follow-up beyond discharge status as shown in Table 1. Information on variables and follow-up periods is summarized in Appendix E. Eighteen of the twenty-four states submitting studies reported at least one study that went beyond discharge. Follow-ups ranged from four months post admission to ten years post admission. Six-month and 12-month follow-ups were most prevalent. Almost all follow-ups were attempted by computer assisted telephone interviews (CATI), unless the data source was an administrative database.

Table 1
Time Intervals Used in 34 State Follow-up Studies

Time Interval	Post Admission/ Intake	Post- Discharge	Total
3 months	0	5	5
4 months	1	0	1
6 months	8	7	15
12 months	5	7	12
14 months	1	0	1
15 months	1	0	1

18 months	1	1	2
2 years	1	5	6
3 years	1	4	5
4 years	1	1	2
4.5 years	0	1	1
5 years	1	1	2
10 years	1	0	1
Total	21	33	54

4.3 Four Major Treatment Effectiveness Indicators Areas

The four major indicator areas of treatment effectiveness are AOD Use, Employment Status, Criminal Justice Involvement, and Living Arrangement.

4.3.1 AOD Use

Thirty-seven of the 53 State studies included a measure of AOD use. There were many studies that did not address changes in the use of alcohol and other drugs. In the admission-to-discharge, timeframe abstinence or certainly reduction in use may be taken for granted while the client remains within the structured treatment environment. When administrative databases are used for follow-up, AOD use is generally not included as a data element.

Table 2 summarizes the various definitions of AOD use included in the FY2000 SAPT Block Grant Application and in the State studies. The Addiction Severity Index (ASI) is one of the most broadly used instruments for assessing client changes over the course of treatment.

**Table 2
Definitions of Substance Use in State Outcome Studies**

How AOD Use is Defined for SAPT Block Grant Reporting (FY2000)	States' Definitions of AOD Use	Number of Studies
States are asked to report frequency of use of 5 substances: alcohol, marijuana, cocaine, amphetamines, and opiates. Data are to be reported in the following categories (number in parentheses indicates equivalent number of days): No Past Month Use (00) 1-3 Times in Past Month (02) 1-2 Times Per Week (06) 3-6 Times Per Week (18) Daily (30)	Addiction Severity Index (ASI) items	5
	Frequency of Use	2
	Use in Past 30 days	3
	Number of Days in Past 30 Days	1
	Abstinent in Past 30 Days	4
	Decreased Severity/Frequency	1
	Use in 6 Months Post-Discharge	1
	Use Post-Discharge	1
	Not specified	19
	The AOD measures are defined as the percent of change in the sum of assigned values for all clients admitted compared to the sum of assigned values for all clients discharged as having completed treatment.	Total

Table 3 shows findings on changes in the use of alcohol and other drugs among clients who were treated in publicly funded State programs. Positive results show that after treatment at various points in time that AOD use has decreased.

Table 3
Impact of Treatment on Use of Alcohol and Other Drugs

State Studies	Follow-up Interval	AOD Use
Alaska <i>Chemical Dependency Treatment Outcome Study (1998)</i>	6 & 12 mos. post-admission	56% in outpatient programs abstained from alcohol for 1 yr. compared to 42% in residential programs.
Arkansas <i>Women & Children's Recovery Center / AR CARES (1995)</i>	3,6, & 12 mos. post-discharge	Reduced AOD use
California <i>Evaluating Recovery Services: The California Drug and Alcohol Treatment Assessment (CALDATA)(1994)</i>	15 mos. post-discharge	Alcohol and other drug use declined approximately 40% from before treatment to after treatment.
Florida <i>1999 Adult and Children Six Month Follow-up Telephone Survey</i>	6 mos. post-discharge	At 6 mo. follow-up 54% were drug-free, 60% alcohol-free, & 81% other drug-free
Florida <i>Evaluation of Substance Abuse Treatment Outcomes(1998)</i>	6 mos. post-discharge	At 6 mo. follow-up 11% of clients who completed treatment reported S.A. problem vs. 26% of clients not completing treatment
Florida <i>FY99 Annual Performance Report</i>	none	64% of adults completed treatment drug-free. 66% of children completed treatment drug-free
Illinois <i>Evaluation of Integrated Services for SA Clients of IL Public Child Welfare Systems</i>	14 mos. post-intake, by phone	At 14-mo. follow-up, Participation in Initiative program reduced likelihood of drug use.
Illinois <i>Substance Abuse Treatment Outcomes in Illinois: A Collar County Study</i>	6 mos. post-intake, by phone	Reduction in days drinking in prior 30 days from 6 at intake to 1 at 6-mo. follow-up. Also decrease in days using cocaine & marijuana.
Illinois <i>Target Chicago</i>	6 mos. post-intake	At follow-up, significantly fewer days of use of alcohol, heroin, cocaine, and cannabis. Significantly more days of abstinence from alcohol and other drugs during 30 days preceding follow-up interview. Greater improvement was noted in CIU cohort than non-CIU cohort
Iowa <i>1998 Substance Abuse Reporting System Admission, Discharge, & Follow-up Report 1999</i>	unspecified	Of follow-up population, 34% were 'not using any drug' vs. 0.9% of discharge population vs. 0% of admissions population
Kansas <i>Kansas AOD Treatment 1994 Outcome Study - 6 mo. Follow-up (1994, 1995)</i>	6 mos. post-admission, by phone	Comparison of ASI results at intake, discharge, & 6mo. Follow-up showed dramatically reduced levels of AOD use, which rose after discharge but not to intake levels.
Kentucky <i>Kentucky Treatment Outcome Study</i>	12 mos. post-discharge, by phone	Comparisons of admission to 12mo. follow-up: 34% reduction in drinking more than intended
Massachusetts <i>Substance Abuse Treatment Outcomes and System Improvements 2000</i>	3 mos. post-discharge	Significantly improved abstinence rates among residential clients, from 41% at admissions to 83% 3mo. Post-discharge; outpatient clients increased abstinence from 55% at intake to 71% post-discharge.
Missouri <i>A 2-Year Follow-up Assessment of Missouri Alcohol and Drug Treatment Programs Fall 1994</i>	3, 12, & 24 mos. follow-up	43% reported abstinence for entire 2yrs post-discharge, 70% reported less usage post-discharge.
Montana <i>Substance Abuse Treatment at the Montana Chemical Dependency Center 4/96</i>	6 mos. post-intake	At follow-up 63% indicated abstinence

State Studies	Follow-up Interval	AOD Use
New Jersey <i>New Jersey Substance Abuse Treatment and Criminal Offenders 2000</i>	none	45% of women, including 33% of female inmates, were using AOD at time of discharge, compared with 28% of men generally, including 18% of male inmates.
New York <i>Behavior of Clients Remaining in Treatment at Least 6 Months 1999</i>	none	% of clients who had discontinued AOD use ranged from 70% for AOC programs to 91% for HH programs.
New York <i>Methadone Patients in Treatment Continuously for at least 10 Years 1999</i>	Comparison of 10yr patients to patients in MMT 3mos to 5 years	Most 10-year patients were abstinent
North Carolina <i>Continued performance measurement system*</i>	N/A.	Abstinence significantly improved. Drug use significantly improved.
North Carolina <i>Treatment Outcome Performance Studies (TOPPS)*</i>	N/A.	Drug use declined substantially for each type of substance
North Carolina <i>Treatment Outcome Performance Studies (TOPPS)*</i>	N/A.	Drug use declined substantially for each type of substance
North Carolina <i>Treatment Alternatives to Street Crime (TASC)*</i>	N/A.	Abstinence occurred for 48% at discharge. Drug use for those still using drugs was less often.
North Carolina <i>Methadone Treatment Quality Assurance System (MTQAS)*</i>	N/A.	Abstinence for injected drug use for 94%. Urine screens for opiates negative for 79% and for cocaine 88%
Ohio <i>Cost-Effectiveness Study: Comprehensive Analysis of Results 1996</i>	6 & 12 mos. post-admission	Abstinence rate for 6 months after admission was 60% and 46% at one year. Rehab group did better than control (46% vs. 34% at one year). Long-term showed higher rate of abstinence than others.
Ohio <i>Treatment Alternatives to Street Crime (TASC)*</i>	N/A.	Abstinence occurred for 76% of discharges. Drug use testing negative for 92%
Ohio <i>TASC Programs*</i>	N/A.	Abstinence occurred for 47% of discharges. Urine testing negative for 88% and 91% for breath testing
South Dakota <i>South Dakota Comprehensive Report 1994</i>	6 & 12 mos. post-admission	Abstinence rate 45% of outpatients at 6mos. 54% at 12 mo. - (However, both were lower than for comparison group.) Results based on Outpatients vs. Comparison Group.
Tennessee <i>Tennessee Outcomes for Alcohol and Drug Services (TOADS) 12-mo. Follow-up 1994, 1995, 1996, 1997, 1998</i>	6 & 12 mos. post-discharge	<u>1994</u> : 59% (adults) to 80% (youth) alcohol abstinence at 6 mo. Follow-up and 77% (adults) to 67% (youth) no drug use at 12 mo. Follow-up. <u>1995</u> : 61% (adults) to 76% (youth) alcohol abstinence and 76% (adults) to 73% (youth) no drug use at 6 mo. Follow-up. <u>1996&1997</u> : 60-67% alcohol abstinence and 79-86% no drug use at 6 mo. follow-up. <u>1998</u> : 57% alcohol abstinence at 6 mo. Follow-up
Texas <i>Texas Research institute*</i>	n.a.	Abstinence achieved by 83%
Texas <i>Treatment Performance Measurement Review - Continual Performance Measurement System*</i>	n.a.	Abstinence achieved for 81% of clients. Drug use reduced for 64%.
Utah <i>Treatment Outcomes Pilot Study</i>	7 mos. post-admission	Drastically reduced average number of days clients used AOD, esp. heroin, cocaine, & marijuana
Washington <i>Treatment Outcome Evaluation: Youth Admitted to Residential Chemical Dependency Treatment Under "Becca" Bill 1997</i>	4 mos. post-admission	40% remained abstinent 3 mos. after treatment. 30day alcohol use declined from 77% pre-treatment to 36% post-treatment and marijuana from 87% to 41%.
Washington <i>Evaluation of Pioneer Center North (1998)</i>	1, 2, & 3 years post-discharge	Use of detox services decreased from 26% to 13% for MICA and from 63% to 30% for ICDDT

State Studies	Follow-up Interval	AOD Use
Washington <i>Adolescent Treatment Outcome Study Report (Dec. 1994)</i>	6 mos. post-intake	2/3 were abstinent at 6-mo. follow-up.
Wisconsin <i>Lawrence Center for Chemical Dependency Treatment & Education (1997)</i>	3 & 12 mos. post-discharge	74-75% reported abstinence from alcohol; 78% reported abstinence from drugs at 3mo. follow-up and 87% at 12mo. follow-up.
Wisconsin <i>Jackie Nitschke Center(1996-1998)</i>	6 mos. post-discharge	Average abstinence rate of 39% for 1996-1998, peaking at 49% in 1997 Abstinence rates for outpatient only (69%) was higher than for residential/continuum
Wisconsin <i>Client Treatment Outcome & Customer Satisfaction - 1996 Report</i>	3 mos. post-discharge	60% alcohol abstinence; 87% no drug use
Wisconsin <i>ThedaCare Behavioral Health AODA Outcome Results</i>	6 mos. post-discharge	66% abstained from chemical substances, 57% for at least 6 months
Wisconsin <i>ThedaCare Behavioral Health AODA Outcome Results</i>	6 mos. post-discharge	66% abstained from chemical substances, 57% for at least 6 months

*Source: GAO Report (1999).

4.3.2 Employment Status

Thirty-one of the 53 studies included some measure of employment status. In addition to reporting whether the client was employed full-time or part-time, some studies included changes in earning power as an indicator of improvement. Table 4 summarizes the kinds of indicators used to assess the impact of treatment on employment.

Table 4
Definitions of Employment Status in State Outcome Studies

Definition of Employment Status in SAPTBG Application (FY2000)	States' Definitions of Employment Status	# of Studies
<p>States are asked to report change in employment status among persons completing treatment. The percent of employed persons in the admissions cohort is compared to the percent of employed persons in the discharge cohort. "Employed" includes those employed full-time (35 or more hours/week) and part-time (less than 35 hours/week). States are instructed to exclude those not in the labor force, including homemakers, students, those disabled, retired persons, those not looking for work in the last 30 days and those in institutions.</p> <p>The employment status measure is currently defined as the percent change in the percent of persons employed at admission compared to percent of persons employed at discharge.</p>	Addiction Severity Index (ASI) Items	4
	Number/Percent Full-Time & Part-Time	2
	Employed/Unemployed	6
	Number of days Employed in Past 30 Days	1
	Employed, Was Employed Now Unemployed, Was Unemployed Now Employed	1
	TEDS at Discharge	3
	Days Missed in Last Year	1
	Income/Earnings	4
	Not specified	9
	Total	31

Table 5 shows findings on changes in employment status among clients who were treated in publicly funded State programs. Positive results show that after treatment at various points in time the employment situation improved in a number of different ways.

Table 5
Impact of Treatment on Employment Status

State Studies	Follow-up Interval	Employment Status
Alaska <i>Chemical Dependency Treatment Outcome Study (1998)</i>	6 & 12 mos. post-admission	At 1yr post-treatment full-time employment increased from 30% to 45%; unemployment rates dropped from 45% to 24%. Reductions in tardiness & missing work, especially among outpatients.
Arkansas <i>Women & Children's Recovery Center / AR CARES (1995?)</i>	3,6, & 12 mos. post-discharge	% of women employed increased. Income increased.
California <i>Evaluating Recovery Services: The California Drug and Alcohol Treatment Assessment (CALDATA)(1994)</i>	15 mos. post-discharge	Longer lengths of stay had positive effect on employment, more so for residential than other treatment types.
Florida <i>1999 Adult and Children Six Month Follow-up Telephone Survey</i>	6 mos. post-discharge	69% employed at 6-month follow-up.
Florida <i>Evaluation of Substance Abuse Treatment Outcomes(1998)</i>	6 mos. post-discharge	At follow-up 70% of clients who completed treatment were employed vs. 58% of clients who did not complete treatment
Illinois <i>Substance Abuse Treatment Outcomes in Illinois: A Collar County Study</i>	6 mos. post-intake, by phone	"Positive outcomes." Degree of improvement varied by treatment modality.
Illinois <i>Target Chicago</i>	6 mos. post-intake	At follow-up, greater improvement in CIU cohort than in non-CIU cohort
Iowa <i>1998 Substance Abuse Reporting System Admission, Discharge, & Follow-up Report 1999</i>	unspecified	Clients unemployed decreased from 24% of admissions and discharge populations to 13% of follow-up population.
Kansas <i>Kansas AOD Treatment 1994 Outcome Study - 6 mo. Follow-up (1994, 1995)</i>	6 mos. post-admission, by phone	Number of days of work in past 30 days was 8.9 at intake, 7.0 at discharge, and 13 at follow-up. In the longitudinal analysis, follow-up group was working more hours and earning much more money than prior to intake.
Kentucky <i>Kentucky Treatment Outcome Study</i>	12 mos. post-discharge, by phone	Decreased unemployment from 35.6% at baseline to 9.2% at follow-up.
Maryland <i>Annual Report on Trends and Patterns in Md. AOD Abuse Treatment Programs (1999)</i>	none	Comparisons of admissions to discharge data indicated 44% employed at admission compared to 48% at discharge. Halfway houses and therapeutic communities were more successful in improving employment status.
Massachusetts <i>Substance Abuse Treatment Outcomes and System Improvements 2000</i>	3 mos. post-discharge	Significant improvement for clients in residential treatment (41% employed at discharge vs. 5% at admission). Clients in methadone treatment in FY00 improved employment status (29% vs. 16% at admission).
Missouri <i>A 2-Year Follow-up Assessment of Missouri Alcohol and Drug Treatment Programs Fall 1994</i>	3, 12, & 24 mo.	56% employed at 24mo follow-up vs. 50% at 3mo. and 21% at intake.
Montana <i>Substance Abuse Treatment at the Montana Chemical Dependency Center 4/96</i>	6 mos. post-discharge, by phone	45% employed at follow-up vs.36% at admission

State Studies	Follow-up Interval	Employment Status
New York <i>Behavior of Clients Remaining in Treatment at Least 6 Months 1999</i>	none	Client maintenance or improvement of employment status ranged from 35% for HH to 53% for AOC programs.
New York <i>Methadone Patients in Treatment Continuously for at least 10 Years 1999</i>	Comparison of 10yr patients to patients in MMT 3mos to 5 years	Statistically higher employment: 38% of the 10-year patients were employed vs. 19% of the comparison group.
New York <i>Preliminary Analysis of Behaviors of Methadone Maintenance Patients Remaining in Treatment for 1,2,3,4, & 5 Years 1998</i>	1,2,3,4,&5 years post-admission	Increase in % of patients employed but current rates were still relatively low.
North Carolina Continued performance measurement system*	n.a.	Employment modestly improved
North Carolina <i>Methadone Treatment Quality Assurance System (MTQAS)*</i>	n.a.	Full time for 54%
Ohio <i>Cost-Effectiveness Study: Comprehensive Analysis of Results 1996</i>	6 & 12 mos. post-admission	Employed clients experienced reduction in job problems (44% reported missing work in year before treatment vs. 29% in year after)
Ohio <i>TASC Programs*</i>	none	Employment obtained and improved for 46% of discharges
Oklahoma <i>Oklahoma Substance Abuse Treatment Outcomes Monitoring System</i>	2 years. post-discharge	Post-treatment income gains higher: 7.3% vs.. 2.3% of general public in FY94 and 15% vs. 1.4% in FY95
Oregon <i>Societal Outcomes & Cost Savings of Drug & Alcohol Treatment in the State of Oregon 1996</i>	3 years. post-discharge	Wages paid to treatment completers were 65% higher than for non-completers. Residential treatment completers worked 50 weeks more during 3 years post-treatment vs. 23 weeks for non-completers.
South Dakota <i>South Dakota Comprehensive Report 1994</i>	6 & 12 mos. post-admission	Absenteeism (absent from work during past month) dropped from 27% to 14% in year after treatment. Tardiness dropped from 22% to 7%
Tennessee <i>Tennessee Outcomes for Alcohol and Drug Services (TOADS)12-mo. Follow-up 1994, 1995, 1996, 1997, 1998</i>	6 & 12 mos. post-discharge	In 1998 clients employed increased from 58% at 6 mo. To 71% at 12mo. Interview
Texas TRI*	n.a.	Employment achieved by 64%
Texas Treatment Performance Measurement Review - Continual Performance Measurement System*	n.a.	Employment gained by 33%
Washington <i>Does Substance Abuse Treatment Improve Employment Outcomes for Welfare Recipients? Evidence from Washington State (1996)</i>	2 years. post-discharge	Treatment increased likelihood of becoming employed by 25% to 100% and raised aggregate earnings over 2 yr. period by \$1,700 for welfare recipients who were employed at least part-time.
Washington <i>Employment Outcomes of Chemical Dependency Treatment and Additional Vocational Services Publicly Funded by Washington State (Nov 1997)</i>	18, 36, & 54 mos. post-discharge	Treatment completers were more likely to be employed (83% vs. 75% over 4.5 years) than clients receiving no ADATSA treatment.
Wisconsin <i>Lawrence Center for Chemical Dependency Treatment & Education (1997)</i>	3&12 mos. post-discharge	74% were employed at 12 mo. follow-up
Wisconsin <i>Jackie Nitschke Center(1996-1998)</i>	6 mos. post-discharge	Client's ability to function on the job increased from 48% prior to 84% post for residential and from 5% to 95% for outpatient only.

State Studies	Follow-up Interval	Employment Status
Wisconsin <i>Client Treatment Outcome & Customer Satisfaction - 1996 Report</i>	3 mos. post-discharge	At 3 mons. post-discharge employment status was: 55% full-time, 23% part time, 19% underemployed, 46% reported work life is better.
Wisconsin <i>ThedaCare Behavioral Health AODA Outcome Results</i>	6 mos. post-discharge	Increase in job retention and number of days work attended

*Source: GAO Report (1999).

4.3.3 Criminal Justice Involvement

Thirty-one of the 53 State treatment outcome studies included a measure of criminal activity. Table 6 summarizes the wide variety of indicators used in the State studies to assess the client's involvement in the criminal justice system. The ASI was the most frequently used instrument. The time interval ranged from involvement in criminal activity in the past 30 days to involvement in past 24 months. About a quarter of the studies used number of days rather than number of times of involvement in criminal activity.

Table 6
Definitions of Criminal Activity Used by States

Definition of Criminal Activity in SAPTBG Application (FY2000)	States' Definition of Criminal Activity	No. of Studies
States are to report changes in the number of client arrests before admission and during the course of treatment. The criminal activity measure is defined as the percent increase or decrease in the number of client arrests that occurred between admission and discharge as compared to the number of arrests that occurred in the six months prior to admission.	Addiction Severity Index items	4
	Number/Percent Arrested	3
	Number of Days Arrested in Past 6 Months	3
	Number of Days Involved in Criminal Activity in Past 30 Days	1
	Arrests in Last 3 Months	1
	Jailed in Past 24 Months	1
	Number Legal Problems 24 Months Before Treatment and 6 Months After Treatment	1
	Number of Arrests 1 Year Before and 1 Year After Treatment	1
	DUIs	1
	Recidivism Rate	1
	Post Treatment Arrests	1
	Criminal Justice Involvement Status	1
	Criminal Activity	1
	Not specified	11
	Total	25

Table 7 shows findings on changes in criminal activity among clients who were treated in publicly funded State programs. Positive results show that after treatment at various points in time involvement in the criminal justice system was reduced as defined by a variety of different measures.

Table 7
Impact of Treatment on Clients' Criminal Activity

State Studies	Follow-up Interval	Criminal Activity
Alaska <i>Chemical Dependency Treatment Outcome Study (1998)</i>	6 & 12 mos. post-admission	Substantial decreases 1yr post-treatment in criminal arrests (34% to 9% for residential; 28% to 3% for outpatients), traffic arrests (28% to 5% for residential; 37% to 6% for outpatients), & car accidents (20% to 9% for residential; 12% to 5% for outpatients).
California <i>Evaluating Recovery Services: The California Drug and Alcohol Treatment Assessment (CALDATA)(1994)</i>	15 mos. post-discharge	65% decline in those arrested/taken into custody. The greater the length of stay in treatment, the greater the % reduction in criminal activity.
Iowa 1998 Substance Abuse Reporting System Admission, Discharge, & Follow-up Report 1999	unspecified	No arrests for 93% of discharges since admission vs. 88% of follow-up population since discharge (-4.7%), in contrast to 40% of admissions (in past 12 mos.)
Kansas <i>Kansas AOD Treatment 1994 Outcome Study - 6 mo. Follow-up (1994, 1995)</i>	6 mos. post-admission, by phone	Criminal charge rate much lower for those interviewed at discharge than at intake. At follow-up there were fewer days of criminal activity, 75% reduction in days in custody, 50% reduction in those awaiting court action.
Kentucky <i>Kentucky Treatment Outcome Study</i>	12 mos. post-discharge, by phone	85% reduction in drug trafficking arrests, 66% reduction in DUI arrests, 74% decrease in crimes against property
Maryland <i>Annual Report on Trends and Patterns in Md. AOD Abuse Treatment Programs (1999)</i>	none	Dramatic decreases in arrest rates for correctional and residential treatment (compared to 2 years. prior to treatment). Arrest rates decreased in other modalities as well.
Massachusetts <i>Substance Abuse Treatment Outcomes and System Improvements 2000</i>	3 mos. post-discharge	Results of analysis of 3 databases: Comparison of residential admissions to 3mo. post discharge showed drop from 24% to 0% in arrests - TOPPS-1. Comparison of outpatients showed drop from 47% to 1% post-discharge. In first quarter FY00 93% of methadone clients were arrest-free vs. 15% at admission
Missouri <i>A 2-Year Follow-up Assessment of Missouri Alcohol and Drug Treatment Programs Fall 1994</i>	3, 12, & 24 mos.	At 12 mo. follow-up 89% reported no new arrests in last 3 mos., an improvement over pre-treatment arrest rates
Montana <i>Substance Abuse Treatment at the Montana Chemical Dependency Center 4/96</i>	6 mos. post-discharge	53% at follow-up had no legal problems (excluding DUI) vs. 42% at intake. 6% had DUIs in 6-mo. follow-up compared to 45% in 24 mos. prior to treatment.
New York <i>Behavior of Clients Remaining in Treatment at Least 6 Months 1999</i>	none	Reduction in number of client arrests ranged from 65% for ADF to 94% for RDF programs
New York <i>Methadone Patients in Treatment Continuously for at least 10 Years 1999</i>	10 years. post-admission	Statistically fewer arrests: arrest rate was 1% of 10-year patients vs. 28% for comparison group (Findings based on comparison of 10yr patients to patients in methadone maintenance treatment 3mos to 5 years)
New York <i>Preliminary Analysis of Behaviors of Methadone Maintenance Patients Remaining in Treatment for 1,2,3,4, & 5 Years 1998</i>	1,2,3,4,&5 years post-admission	Large statistically significant decreases in arrests and incarcerations. Reductions in arrests per patient ranged from -59% for 2-yr cohort to -89% for 1-yr cohort. Reductions in arrests ranged from -18% for 2-yr cohort to -74% for 1-yr cohort.
North Carolina <i>Continued performance measurement system*</i>	n.a.	Significantly improved
North Carolina <i>Treatment Alternatives to Street Crime (TASC)*</i>	n.a.	82% had no arrests while in program

State Studies	Follow-up Interval	Criminal Activity
North Carolina <i>Methadone Treatment Quality Assurance System (MTQAS)*</i>	n.a.	No arrest in past 12 mos. for 95%
Ohio <i>Cost-Effectiveness Study: Comprehensive Analysis of Results 1996</i>	6 & 12 mos. post-admission	12% of clients reported criminal arrests the year after treatment compared to 26% in year before treatment.
Ohio <i>Treatment Alternatives to Street Crime (TASC)*</i>	n.a.	Re-arrest rate 7%
Ohio <i>Analysis of Adult TASC Programs in the State of Ohio*</i>	n.a.	Criminal activity significantly lower for completers
Ohio <i>Arrest and Re-incarceration Following Prison Release*</i>	n.a.	Re-arrests were slightly reduced among participants
Ohio <i>TAPESTRY and OASIS Therapeutic Community*</i>	n.a.	Women had lower re-arrests and males no difference
Oklahoma <i>Oklahoma Substance Abuse Treatment Outcomes Monitoring System</i>	2 years. post-discharge	15% of clients linked with an incarceration file (6%) returned to prison during 2 years following release compared to 20% state rate for recidivism; Among 22% with DUI convictions in FY94, 62% did not have a DUI in 18 mos. following treatment.
Oregon <i>Societal Outcomes & Cost Savings of Drug & Alcohol Treatment in the State of Oregon 1996</i>	3 years. post-discharge	Treatment completers had fewer arrests/convictions in 3yrs after treatment than did non-completers (17% vs. 25%). Nearly half of treatment completers who had prior arrest records were arrest free in 3yr follow-up.
South Dakota <i>South Dakota Comprehensive Report 1994</i>	6 & 12 mos. post-admission	Arrests dropped from 32% to 2%, traffic violations from 66% to 14%, and accidents from 20% to 7% one year after treatment.
Tennessee <i>Tennessee Outcomes for Alcohol and Drug Services (TOADS) 12-mo. Follow-up 1994, 1995, 1996, 1997, 1998</i>	6 & 12 mos. post-discharge	In 1998 arrest records of alcohol clients decreased from 90% before treatment to 18% after treatment
Texas <i>Treatment Alternatives to Incarceration Programs: An Analysis of Retention in Treatment and Outcome Evaluation*</i>	n.a.	Criminal Justice Involvement decreased the longer the stay in treatment
Texas <i>Treatment Performance Measurement Review - Continual Performance Measurement System*</i>	n.a.	Arrested at follow-up 5%
Utah <i>Treatment Outcomes Pilot Study</i>	7 mos. post-admission	94% decrease in number of days clients were detained or incarcerated
Washington <i>Treatment Outcome Evaluation: Youth Admitted to Residential Chemical Dependency Treatment Under "Becca" Bill 1997</i>	4 mos. post-admission	Proportion of youth arrested dropped from 72% to 29%
Washington <i>Adolescent Treatment Outcome Study Report (Dec. 1994)</i>	6 mos. post-intake	Arrests dropped from 49% prior to treatment to 12% in year after admission. Decreases in school discipline problems were also noted.
Wisconsin <i>Client Treatment Outcome & Customer Satisfaction - 1996 Report</i>	3 mos. post-discharge	91% no legal involvement
Wisconsin <i>TheaCare Behavioral Health AODA Outcome Results</i>	6 mos. post-discharge	Reduction in auto accidents and DWI arrests

*GAO Report 1999.

4.3.4 Living Arrangement

The primary intention of the Living Status measure in the SAPT Block Grant reporting was to gauge the extent of homelessness in the treatment population and the impact of treatment on reducing homelessness. Only a handful of studies included a measure having to do with living arrangements. Most used the ASI, which does not target homelessness but rather identifies who is living in the same household with the client. Table 8 displays the operational definitions for this indicator area in each of the 8 studies.

**Table 8
Definitions of Living Status Used in State Studies**

Definition of Living Status in the SAPTBG Application (FY2000)	States' Definitions of Living Status	No. of Studies
<p>States are to report change in homelessness among persons completing treatment during the reporting period. The percent of persons who were homeless at admission is to be compared to the percent of persons who were homeless at discharge. Homeless persons are defined as those with no fixed address and those who are living in shelters.</p> <p>The living status measure is defined as the percent change in the percent of persons homeless at admission compared to the percent of persons homeless at discharge.</p>	Addiction Severity Index (ASI) item	4
	Live Alone/ With Others	1
	Live Alone, With Parent, Spouse, Children, Relative, Friend, Others	1
	Residence Post-Treatment	1
	Describe Neighborhood (safe/unsafe)	1
	Total	8

Table 9 lists the results found in the State studies that included living arrangements as a factor. Since this indicator was used so infrequently and was defined in ways that did not describe homelessness, it is difficult to draw any significant conclusions about the effect of treatment on this measure.

**Table 9
Changes in Living Arrangements Following Treatment**

State Studies	Follow-up Interval	Living Arrangements
Florida <i>1999 Adult and Children Six Month Follow-up Telephone Survey</i>	6 mos. post-discharge	29% with parents, 27% with spouse, 22% with others at follow-up
Iowa <i>1998 Substance Abuse Reporting System Admission, Discharge, & Follow-up Report 1999</i>	unspecified	Over 3% were homeless at admission compared to 2% of discharges and 0.6% of follow-ups
Kansas <i>Kansas AOD Treatment 1994 Outcome Study - 6 mo. Follow-up (1994, 1995)</i>	6 mos. post-admission, by phone	The proportion indicating "no stable arrangements" was 3.5% at discharge, down from 6% at intake, and only .3% at follow-up.
Massachusetts <i>Substance Abuse Treatment Outcomes and System Improvements 2000</i>	3 mos. post-discharge	Supportive housing clients increased their levels of employment between admission and discharge
Missouri <i>A 2-Year Follow-up Assessment of Missouri Alcohol and Drug Treatment Programs Fall 1994</i>	3,12, &24 mos.	Findings suggest increased living situation stability 2 years post-discharge

State Studies	Follow-up Interval	Living Arrangements
New York <i>Preliminary Analysis of Behaviors of Methadone Maintenance Patients Remaining in Treatment for 1,2,3,4, & 5 Years 1998</i>	1,2,3,4,&5 years post-admission	No significant changes in living arrangements
North Carolina <i>Continued performance measurement system*</i>		Living arrangement modestly improved

*Source: GAO Report (1999).

4.4 Additional Indicator Areas

Two other treatment effectiveness indicator areas were identified in the State outcome studies: 1) Physical Health and 2) Mental Health and Family/Social Functioning. These indicator areas provide additional support to the four core indicator areas for measuring the effectiveness of treatment.

4.4.1 Physical Health

Eighteen of the 53 studies included at least one measure of physical health. Measures of physical health were reported in terms of hospitalizations, emergency room visits, and general health. As shown in Table 10, the operational definitions and corresponding measures varied for this indicator area. Results were positive in that after treatment at various points in time hospitalizations decreased, emergency room visits decreased, and general health improved.

Table 10
Physical Health Outcomes

State Studies	Follow-up Interval	Hospitalizations	Emergency Room Visits	General Health
Alaska <i>Chemical Dependency Treatment Outcome Study (1998)</i>	Discharge, 6 & 12 months post-admission	Rates decreased from 36% to 15% among residential patients and from 28% to 7% among outpatients	Decreased from 31% to 19% among outpatients but not among residential (31% to 30%)	
Arkansas <i>Women & Children's Recovery Center/ AR CARES (1995)</i>	3,6, & 12 mos. post-discharge			Physical problems and accidents were fewer
California <i>CALDATA (1994)</i>	15 mos. post-discharge	About 33% reduction		
Illinois <i>Evaluation of Integrated Services for SA Clients of IL Public Child Welfare Systems</i>	14 mo. post-intake			health unrelated to treatment
Kansas <i>Kansas AOD Treatment 1994 Outcome Study - 6 mo. Follow-up (1994-1995)</i>	6 mos. post-admission	Average number of hospitalizations was lower at follow-up: .2 vs. 2.5 at intake		
Massachusetts <i>Substance Abuse Treatment Outcomes and System Improvements 2000</i>	3 mos. post-discharge		Decreased use of ER: 19% among methadone clients vs. 43% at admission	
New York <i>Behavior of Clients Remaining in Treatment at Least 6 Mos. 1999</i>	none	Reduction in number days in hospital ranged from 52% for HH to 87% for RDF Number of days in Inpatient Detoxification also	Reduction in number of ER episodes ranged from 11% for RDF to 39% for AOC	

State Studies	Follow-up Interval	Hospitalizations	Emergency Room Visits	General Health
		decreased.		
New York <i>Behavior of Clients Remaining in Treatment at Least 6 Mos. 1999</i>	none	Reduction in number days in hospital ranged from 52% for HH to 87% for RDF Number of days in Inpatient Detoxification also decreased.	Reduction in number of ER episodes ranged from 11% for RDF to 39% for AOC	
New York <i>Methadone Patients in Treatment at least 10 Years (1999)</i>	Comparison of 10 yr. patients with up to 5 yr. patients	11% of 10-yr patients vs. 15% of comparison group	ER episodes in last 6 months for 10 year patients was 10% vs. 13% of comparison group	
New York <i>Preliminary Analysis of Behaviors of Methadone Maintenance Patients Remaining in Treatment for 1,2,3,4,& 5 Years (1998)</i>	1,2,3,4,5 years post-admission	No discernable patterns but 5 yr. patients experienced reductions on all measures	No discernable patterns but 5 yr. patients experienced reductions on all measures	
North Carolina <i>Treatment Outcome Performance Studies (TOPPS)*</i>	n.a.	Medical overnight stays reduced by 4%	ER visits reduced by 18%	
North Carolina <i>Perinatal & Maternal Substance Abuse Treatment Initiative*</i>	n.a.			73% of clients had full-term births, 13% of births born at very low birth weight
North Carolina <i>Methadone Treatment Quality Assurance System*</i>	n.a.	No medical overnight stays for 93%	No ER visits for 82%	
Oregon <i>Societal Outcomes & Cost Savings of Drug & Alcohol Treatment (1996)</i>	3 years post discharge		In post-treatment period treatment completers had 53% fewer ER visits than non-completers	Increased in paid medical claims was lower for completers than for non-completers.
Utah <i>Treatment Outcomes Pilot Study</i>	7 mos. post-admission			28% decrease in number of days clients experienced medical problems
Washington <i>Evaluation of Pioneer Center North (1998)</i>	1,2, & 3 years post-discharge			Use of Medicaid-paid medical services decreased from \$5M to \$2.8M for MICA and from \$3.8M to \$2.7M for ICDT
Wisconsin <i>Jackie Nitschke Center (1996-1998)</i>	6 months post-discharge	Residential clients hospitalized decreased from 20% 6 mos. prior to treatment to 4% at 6 mos. post-discharge.		Clients' report of good to excellent health increased from 32% prior to treatment to 61% post among residential clients and from 55% prior to 77% post for outpatient only.
Wisconsin <i>Client Treatment Outcome & Customer Satisfaction (1996)</i>	3 months post-discharge			Physical health is better
Wisconsin <i>TheaCare Behavioral Health AODA Outcome Results</i>	6 months post-discharge	Lower rates of inpatient hospitalization		

*Source: GAO Report (1999).

4.4.2 Mental Health and Family/Social Functioning

Nine States included indicators of changes in the client's mental health, relationship to family, and social functioning. The Addiction Severity Index (ASI) was used frequently as a measure.

Table 11 shows treatment outcomes for mental health and family/social functioning across 14 studies and 9 States. Positive results show that after treatment at varying points in time that mental health, family, and social functioning improved.

Table 11
Mental Health and Family/Social Functioning Outcomes

State	Follow-up Interval	Mental Health	Family/Social Functioning
Arkansas <i>Women & Children's Recovery Center / AR CARES (1995?)</i>	3,6, & 12 mos. post-discharge		Family interaction skills improved
Florida <i>1999 Adult and Children Six Month Follow-up Telephone Survey</i>	6 mos. post-discharge		Family fighting associated with use of all drugs.
Illinois <i>Evaluation of Integrated Services for SA Clients of IL Public Child Welfare Systems</i>	14 mos. post-intake		Results at 14-mo. follow-up Family Functioning was unrelated to participation in Initiative program
Illinois <i>Substance Abuse Treatment Outcomes in Illinois: A Collar County Study</i>	6 mos. post-intake	Positive outcomes related to Psychiatric Status. Degree of improvement varied by treatment modality.	Positive outcomes related to Family/Social Outcomes. Degree of improvement varied by treatment modality
Kansas <i>Kansas AOD Treatment 1994 Outcome Study - 6 mo. Follow-up (1994, 1995)</i>	6 mos. post-admission		Family/Social problems declined from 25% at intake to 15% at discharge to 8% at 6mo. follow-up.
Missouri <i>A 2-Year Follow-up Assessment of Missouri Alcohol & Drug Treatment Programs Fall 1994</i>	3,12. & 24 mos.		Outcomes were better for those who completed treatment., attended support groups upon discharge, and maintained stable personal relationships
North Carolina Continued performance measurement system*	n.a.	Mental health moderately improved	
North Carolina Treatment Outcome Performance Studies (TOPPS)*	n.a.	Psychiatric overnight stays reduced by 16%	
Utah <i>Treatment Outcomes Pilot Study</i>	7 mos. post-admission	47% decrease in number days experienced psychological or emotional problems	63% decrease in number days experienced conflicts with family members,
Washington <i>Treatment Outcome Evaluation: Youth Admitted to Residential Chemical Dependency Treatment Under "Becca" Bill 1997</i>	4 mos. post-admission		33% of "Becca" youth & 18% of "non-Becca" youth reported school suspensions compared to 68% prior to treatment
Washington <i>Evaluation of Pioneer Center North (1998)</i>	1,2, & 3 yrs post-discharge	Use of MH services declined. Inpatient psychiatric services declined	
Wisconsin <i>Jackie Nitschke Center(1996-1998)</i>	6 mos. post-discharge		Clients reported improved relationship with spouse and children, improved ability to deal with stress

State	Follow-up Interval	Mental Health	Family/Social Functioning
Wisconsin <i>Client Treatment Outcome & Customer Satisfaction - 1996 Report</i>	3 mos. post-discharge	Psychologically/emotionally better - 58%	Family life is better - 59%; Spiritual life better - 39%
Wisconsin <i>TheaCare Behavioral Health AODA Outcome Results</i>	6 mos. post-discharge	Fewer MH symptoms	Better family relationships

4.5 Other Relevant Variables

States are looking not only at client outcomes but also at factors that impact the quality of treatment and help to reduce the relapse rate upon leaving the treatment program. These include the length of stay in treatment, enrollment in after care and continuing care services and participation in peer support groups such as Alcoholics Anonymous, target populations, and type of service (residential or outpatient), and modality (ex. methadone maintenance).

Two studies included length of stay as an additional variable in their assessment of treatment outcomes. The scientific research has consistently found that length of stay in treatment is associated with treatment effectiveness. The longer the stay (coerced or otherwise), the greater the likelihood of improvement. Positive results in these studies support this position.

Five studies examined the impact of enrollment in aftercare and participation in peer support groups at various points in time following treatment. The findings are summarized in Table 12. Although the number of studies addressing this issue was small, it was shown that abstinence rates were high for those enrolled in post treatment care or peer support groups like AA and that treatment outcomes were better for those who participated in aftercare and peer support groups.

Table 12
Findings on Aftercare and Peer Support

State	Follow-up Interval	Aftercare & Peer Support
Alaska <i>Chemical Dependency Treatment Outcome Study (1998)</i>	6 & 12 mos. post-admission	Strong association found between abstinence rates and post-treatment care and peer support (AA). 75% of residential patients receiving aftercare were abstinent at 1 yr.
Missouri <i>A 2-Year Follow-up Assessment of Missouri Alcohol & Drug Treatment Programs Fall 1994</i>	3, 12, & 24 mos.	Outcomes were better for those who completed treatment., attended support groups upon discharge, and maintained stable personal relationships
Tennessee <i>Tennessee Outcomes for Alcohol and Drug Services (TOADS) 12-mo. Follow-up 1994, 1995, 1996, 1997, 1998</i>	6 & 12 mos. post-discharge	77% in 1995 and 74% in 1996 & 1997 participated in support groups
Wisconsin <i>Lawrence Center for Chemical Dependency Treatment & Education (1997)</i>	3 & 12 mos. post-discharge	78% were in support group at 12 mo. follow-up

State	Follow-up Interval	Aftercare & Peer Support
Wisconsin <i>Client Treatment Outcome & Customer Satisfaction - 1996 Report</i>	3 mos. post-discharge	46% involved in self help group

Some State studies focused on special populations such as those in the criminal justice system (first four studies) and the adolescent treatment population (fifth study). Three of the four studies showed that treatment had a positive impact on those in the criminal justice system and that it had a positive impact on adolescents in a residential treatment program as well. These studies are briefly described below:

- New Jersey's study, just recently published in 2000, compared criminal offenders prior to incarceration with the general treatment community and found that addiction treatment clients, especially women, who later were incarcerated were less likely than the general addiction treatment community to achieve their treatment goals (regarding AOD use, employment, legal problems, etc.).
- North Carolina's TASC Program, the Treatment Alternatives to Street Crime, reported modest improvements. Abstinence was achieved by 48% of the criminal justice clients at discharge and 82% had no arrests while in the program.
- Ohio's TASC Programs for court referred adults and juveniles reported reduced criminal activity, especially for adults who completed the program. Abstinence was achieved for 76% of juvenile discharges and for 47% of adult discharges. In Ohio's TAPESTRY and OASIS Therapeutic Community programs, women had lower re-arrests but for males re-arrests were slightly reduced or no difference was noted.
- Texas's Treatment Alternatives to Incarceration Programs for adult criminals reported that criminal justice involvement decreased the longer the stay in treatment.
- Washington State conducted several outcome studies that focused on the adolescent treatment population. In a small 1997 study that compared youth admitted to residential chemical dependency treatment under the "Becca" bill with "non-Becca" youth, abstinence was maintained by 40% of "Becca" youth 3 months after treatment; 36% reported 30-day alcohol use, down from 77% pre-treatment.

Other State studies focused on the difference in results found between residential and outpatient treatment programs. In general, results are positive and show that inpatient and outpatient treatment programs are effective as measured in a number of different ways although the effective appears to be stronger for those in outpatient programs. This finding is not surprising since clients in residential programs are more likely to start out with a more severe problem with alcohol and drug abuse. The results of these three studies are described below:

- Alaska's 1998 treatment outcome study included residential and outpatient clients tested at admission, discharge, 6 months and 12 months after admission. More moderate results were

obtained for the residential clients - 42% abstinent vs. 56% of outpatients, criminal arrests dropped from 34% to 9% for residential clients and 28% to 3% for outpatients; hospitalization rates decreased from 36% to 15% among residential patients and from 28% to 7% among outpatients.

- Massachusetts' 2000 treatment outcomes report indicated a drop from 24% to 0% arrests in residential clients and from 47% to 1% arrests among outpatients at 3 months-post discharge. In regard to AOD use, more improvement was noted among residential clients: abstinence rates rose from 41% at admissions to 83% at 3 months post-discharge for residential clients and from 55% at intake to 71% for outpatients.
- Wisconsin's program level assessment at the Jackie Nitschke Center (1996-1998) indicated at six months post-discharge that the abstinence rate for outpatients (69%) was higher than for residential clients, that the client's ability to function on the job increased from 48% to 84% for residential clients and from 55% to 95% for outpatients, and that clients' report of good to excellent health increased from 32% to 61% among residential clients and from 55% to 77% for outpatients.

Finally, two States addressed treatment modality by monitoring client behavior among those in methadone maintenance treatment programs. In general, the positive results of these three studies show that methadone treatment is effective as measured in the various ways described below:

- North Carolina's Methadone Treatment Quality Assurance System (MTQAS) reported full time employment for 54%, no medical overnight stays for 93%, no emergency room visits for 82%, no arrests in past 12 months for 95% of methadone patients.
- New York published a study in 1999 that compared methadone patients in treatment continuously for at least 10 years with patients in methadone maintenance treatment 3 months to 5 years. Most 10-year patients were abstinent. Employment rates were 38% for 10-year patients vs. 19% of the comparison group. Arrest rate was 1% of 10-year patients vs. 28% for the comparison group.
- New York tracked 673 patients in 5 stratified samples based on length of stay (from 1 to 5 years in treatment). The results published in 1998 showed varying levels improvement: There was an increase in the percent of patients employed (but still relatively low); there were significant reductions in arrests per patient (-59% for 2-year cohort to -89% for 1-year cohort). There were no significant changes in living arrangements and no discernable patterns in numbers of hospitalizations or ER admissions but 5-year patients experienced reductions on all measures. A major finding was that adjudication and incarceration savings were estimated at over \$35 million.

4.6 Other Related Studies

Other related State outcome studies demonstrate the effectiveness of treatment in terms of cost savings in other areas, the effectiveness of individual providers, and improvement in accountability, reporting, and program evaluation. These studies are described below:

Cost Offset Studies - Some treatment outcome studies were designed and conducted to demonstrate that the savings realized in reduced crime, healthcare costs, emergency room visits, and unemployment offset the cost of treatment. Table 13 provides examples of how treatment not only benefits the client economically, but it also benefits all citizens through the avoidance of high medical costs, adjudication and incarceration costs, and public assistance costs. The CALDATA study is well known for its finding that the benefits of treatment outweighed the costs of treatment by 4 to 1 up to as high as 12 to 1, depending on type of treatment. Ohio's 1996 study reported similar cost-offset to cost of treatment ratios based on the client severity level. Washington State leads the nation in its attention to cost-avoidance and cost-benefit analysis.

**Table 13
Cost Benefits of Treatment**

State	Follow-up Interval	Cost Benefits
California <i>Evaluating Recovery Services: The California Drug and Alcohol Treatment Assessment (CALDATA)(1994)</i>	15 mos. post-discharge	Benefits for citizens of AOD treatment outweighed cost of treatment by ratios from 4:1 to 12:1, depending on type of treatment. Cost of treating 150,000 participants in 1992 was \$209 million, while benefits during treatment and first yr. after were estimated at \$1.5 billion
New York <i>Preliminary Analysis of Behaviors of Methadone Maintenance Patients Remaining in Treatment for 1,2,3,4,& 5 Years 1998</i>	1,2,3,4, & 5 years post-admission	Adjudication and incarceration savings were estimated at over \$35 million.
Ohio <i>Cost-Effectiveness Study: Comprehensive Analysis of Results 1996</i>	6 & 12 mos. post-admission	By client severity level, ratios of cost-offsets to cost of treatment were: low=8.4:1; moderate = 7.4:1; high=4.3:1.
Washington <i>Cost Savings in Medicaid Medical Expenses: An Outcome of Publicly Funded Chemical Dependency Treatment in Washington State (6/97)</i>		Treated clients cost ave. \$4500 less in medical care than those who did not receive treatment. (Ave. cost of treatment = \$2300/treatment episode). Savings were greatest for those who had Medicaid medical expenses prior to treatment, who cost ave. \$7900 less than a similar group of untreated clients over the 5yr. follow-up period.
Washington <i>ADATSA Treatment Outcomes: Employment & Cost Avoidance (Nov 1994)</i>	<i>n.a.</i>	For persons on some form of publicly funded services before treatment, 1 st year cost avoidance rate is 23%: \$491 avoided of \$2,114 spent on ADATSA treatment. Major reasons for cost avoidance result are: lower inpatient medical costs and lower re-entry into inpatient treatment. Cost avoidance impact of treatment is largest among younger clients and among clients without mental health problems.

State	Follow-up Interval	Cost Benefits
Washington <i>Economic Benefits & Costs Associated with Substance Abuse Treatment Provided to Indigent Clients through the Washington State's ADATSA Program (Nov 1997)</i>	1 year post-discharge	<u>Earnings</u> - average quarterly wages post treatment for AFDC clients was \$875 vs. \$423 for untreated AFDC recipients. <u>Public Assistance Costs</u> - 17% decrease: \$2,451 for treated AFDC clients vs. \$2,950 for untreated AFDC clients <u>Cost Savings</u> - Cost savings for Medicaid, public assistance and treatment reentry translates into benefit representing 38% of treatment costs. For every \$1 invested in treatment, 38 cents was recouped in first 12 mos. following treatment. In year after treatment, hard drug users who received treatment incurred \$805 in Medicaid costs in contrast to \$2,109 for untreated hard drug users
Washington <i>Employment Outcomes of Chemical Dependency Treatment and Additional Vocational Services Publicly Funded by Washington State (Nov 1997)</i>	18, 36, & 54 mos. post-discharge	<u>Earnings</u> - Treatment completers with recent employment experience earned higher wages over 4.5 years. than clients receiving no ADATSA treatment. Over 4.5 years. post-treatment clients who completed treatment earned ave. \$145/mo. more than clients who were assessed but not treated. 46% of clients who completed additional vocational services earned more over 4.5 years. than \$320/mo vs. 22% of clients who completed treatment only and 17% of those who did not receive ADATSA treatment.

Individual Treatment Provider Studies. The States were requested to submit information on individual treatment provider studies that were of sufficient quality to be included in the inventory of State outcome study results data. Only Wisconsin submitted reports on three individual treatment programs. For one treatment program, 74% were employed at a 12-month follow-up point and for another treatment program 91% of clients had no legal involvement 3 months after treatment.

The TOPPS-I Program Assessment. Maryland submitted information on the TOPPS-I Treatment Outcomes and Performance Pilot Studies (TOPPS-I) program funded by SAMHSA's Center for Substance Abuse Treatment in 1997. It was one of the 14 States that participated in the program. These State performance and substance abuse treatment outcome pilot studies were designed to address specific issues that improve state wide treatment program accountability. Maryland's study, which was published in 2000, included adult discharges in FY1997 from 58 drug-free outpatient treatment programs. Their study focused on program evaluation rather than client outcomes per se. The 58 programs were ranked based on seven success measures.

Studies in Progress. Several studies were mentioned by the States but were not due to be completed by the time of this publication. The best known of these are the TOPPS-II studies. TOPPS II is an enhancement over its predecessor, the TOPPS I program. Ten of the 19 TOPPS II States were recipients of the TOPPS I funding. Also, States provided feedback on the FY 2000 Substance Abuse Prevention and Treatment Block Grant Application and reporting process. Twenty States of the 34 States responding indicated they would not be submitting data. The major reasons for not reporting were that the States do not collect discharge data (for pre-post reporting) and that they do not have the data infrastructure in place to report the data requested.

5.0 DISCUSSION OF TREATMENT EFFECTIVENESS

The results of the Meta-analysis conducted in this study revealed the similarities and differences across the individual State outcome studies and led to the identification of important trends with regard to treatment effectiveness. Data was analyzed according to treatment effectiveness indicator areas and other variables that impact treatment effectiveness. Operational definitions and associated outcome measures were identified, organized, and compared according to the four core treatment effectiveness indicators; AOD Use, Employment Status, Criminal Justice Involvement, and Living arrangement. Also, data was grouped according to two additional treatment indicator areas: Physical Health and Mental Health and Social Family and Social Functioning. Not only were there differences in the measures used to evaluate treatment outcomes for each indicator area, but also there were differences in the evaluation periods in terms of time intervals. Despite these differences, the systematic review of the results of the State studies showed similarities in treatment outcomes and positive results that indicate that treatment is effective.

5.1 Treatment Effectiveness Indicator Areas

While all studies reported some reduction in the use of alcohol and other drugs, the degree of change and the nature of the changes varied widely. A number of the studies did not quantify the results but simply reported reduced AOD use, reduced likelihood of drug use, significant improvement, or status at follow-up with no baseline for comparison. Some of the programs used abstinence as the criteria while others accepted reduced use as an indicator of treatment impact. Almost 40% of the studies specified a follow-up point of six months (after admission or after discharge). About a fourth of the studies assessed AOD use at 12 months, and for most of the studies this was the second follow-up. In studies with multiple follow-ups, abstinence rates were generally higher in the later follow-up. Tennessee, for example, has a system for 6-month and 12-month post-discharge follow-ups each year (1994-1998 included here); these 5 years of results consistently show a higher rate of abstinence at 12 months among its adult population. The reverse seems to be true for youth that generally show higher abstinence at 6 months than at 12 months. However, it should be noted that it is often challenging to serve the treatment needs of adolescents and that this population deserves more attention in order to improve the effectiveness of treatment in the short term and in the long term.

Employment status improved in every reported instance, again with many variations due to differences in follow-up intervals and specific measures used in the State studies. In most cases in which the interval was admission-to-discharge, the results were reported as percent employed, just as defined in the SAPTBG reporting criteria. Significant improvement was noted in the Massachusetts' 2000 analysis of administrative data sets, which indicated an increase from 5% employed at admission to 41% employed at discharge. The Missouri study, which included 3-month, 12-month and 24-month follow-ups, showed a steady increase in percent employed. The New York study that tracked methadone patients for five years found increases in the percentage of patients employed but still relatively low rates overall. Other outcomes related to employment included reduction in number of days missing work, higher earnings, improved ability to function on the job, and better job retention. The results of these longer follow-up intervals

beyond admission-discharge serve to confirm and strengthen the results reported in the FY2000 SAPT Block Grant Applications, which are limited to the admission-discharge timeframe.

The State studies generally showed dramatic decreases in the clients' criminal activity following treatment; however, none of them measured the shift in the same way. Examples of definitions of criminal activity are number of drug trafficking arrests, DUI's, or number of days involved in criminal activity. Even when the same indicator (number/percent of arrests) was used, the time frame varied so much that it was difficult to make direct comparisons of the studies included. Nevertheless, treatment is consistently associated with reduction in crime regardless of the definition of criminal activity and the length of the follow-up period.

The living arrangement indicator area proved to be limited in its usefulness as an indicator of treatment effectiveness in this study. Only one of the State studies included here specifically addressed homelessness as a treatment outcome measure. The 1999 Iowa study found that over 3% of clients were homeless at admission compared to 2% of the discharges and 0.6% of the follow-ups. New York's five years of post-admission follow-ups showed no significant changes in the living arrangements within its methadone maintenance population. Since this indicator area was not widely used and the measures were varied, results were not definitive.

Results were positive and showed that treatment was effective when the two additional treatment effectiveness indicator areas: Physical Health and Mental Health and Family/Social Functioning were considered. All states reported decreases in physical health problems and hospitalizations. In general, fewer family problems were reported in post-discharge follow-ups. All but one study reported positive results. In Illinois' 14-month follow-up family functioning was found to be unrelated to participation in its Initiative program. Although these indicator areas were not as frequently employed as the SAPT effectiveness indicator areas, the measures for these indicators proved to be useful in evaluating the effectiveness of treatment and lend further support to the positive results found under those indicators areas.

5.2 Important Variables that Impact Treatment Outcomes and Related Studies

As shown in the results section of this report, there are other relevant variables that impact treatment outcomes such as length of stay in treatment programs, participation in after care services or peer support groups after treatment, membership in special populations, treatment setting (outpatient vs. residential) and treatment modality (e.g. methadone maintenance treatment). Studies that addressed treatment effectiveness in other ways were noted and reviewed. They include cost offset studies, individual treatment provider studies, TOPPS-I studies and TOPPS-II studies.

Length of stay is a variable that clearly influences treatment outcomes. The longer the stay (coerced or otherwise) the better the outcome. For example, New Jersey's recent study of criminal offenders prior to incarceration found that inmates were less likely to complete treatment than those in the general treatment population (34% vs. 52%) and were more likely to drop out (46% vs. 35%). One of Washington State's studies of adolescent treatment (Dec. 1994) reported that over half of treatment completers remained abstinent for the first six months after treatment versus 35% of the treatment dropouts. Also, of the adolescents who attended 30 to 50 sessions, 68% improved, as compared to 50% of those who attended less than 30 sessions.

Participation in after care services and peer support groups at varying intervals after treatment has a positive impact on treatment outcomes. In five studies, after care services and peer support group participation was examined. In Alaska, there was a strong association found between abstinence rates and post-treatment care and peer support (Alcoholics Anonymous). In Missouri, treatment outcomes were better for those who completed treatment, attended support groups upon discharge, and maintained stable personal relationships.

Four studies targeted treatment of the criminal justice population and Washington State conducted several outcome studies that focused on the adolescent treatment population. For those persons who received treatment in the criminal justice system, modest improvement in abstinence rates and reduced rates of criminal justice system involvement were shown. For youth admitted to residential chemical dependency programs, abstinence was maintained by 40% of youth three months after treatment. Although results were not particularly strong for the adolescent population, it is important to recognize that youth programs are more likely to embrace harm reduction objectives rather than the outcomes typically associated with adult treatment.

Other studies reviewed compared treatment effectiveness based on treatment setting, i.e., outpatient vs. residential and treatment modality, i.e., methadone maintenance treatment. The studies consistently showed that treatment works regardless of modality or setting; however, taking the severity of the addiction into consideration, more conservative results may be expected for residential clients versus outpatients. For example, in Alaska's 1998 treatment outcome study patients were tested at admission, discharge, 6 months and 12 months after admission. More moderate results on the outcome measures were obtained for the residential clients compared to the outpatients. Results showed that on the abstinence measure, the residential rate was 42% and the outpatient rate was 56%. On the criminal arrest outcome measure, criminal arrests were down from 34% to 9% for residential clients whereas criminal arrests were down from 28% to 3% for outpatients. On the hospitalization rate measure, hospitalizations decreased from 36% to 15% for residential patients and from 28% to 7% for outpatients. Finally, two studies reported Methadone Maintenance results that demonstrated incremental progress over extended periods of time when measured by improvement in employment and reduced number of arrests.

Five states examined the cost of treatment compared to the cost savings in other areas in their studies. The states used different approaches to demonstrate that the benefits of treatment far outweighed the cost of treatment. More cost benefit analysis studies like these are needed to identify the overall benefits of treatment not only to the patient but also to society as a whole.

States were asked to submit information on studies conducted by individual providers in their state that were suitable for inclusion in this analysis. Wisconsin was the only state that reported information on individual provider treatment programs. The results of treatment were consistent with results of studies reviewed and analyzed in this report from state outcome studies even though the sample size was small. Basically, findings showed that the effect of treatment was positive using two different outcome measures. One study reported that 91% of patients had no criminal justice system involvement after three months of treatment while another study reported

74% were employed at a 12-month follow-up. These studies focused primarily on the client's status at follow-up.

Maryland submitted information on the TOPPS-I Treatment Outcomes and Performance Pilot Studies (TOPPS-I) program funded by SAMHSA's Center for Substance Abuse Treatment in 1997. It was one of the 14 States that participated in the program. These State treatment outcome studies were designed to address specific issues that improve state wide treatment program accountability. The experience with this project led to the formation of a statewide task force looking at performance measurement and how to approach it. The study helped identify issues with the reporting system, such as a lack of consistency in how programs were reporting and what they were reporting. The study was valuable in the insights it provided for system improvements as well as the outcome findings. States have been conducting studies to influence quality improvement processes based on variables associated with their ability to impact treatment effectiveness. Now, a new generation of studies is unfolding that will allow states to refine their own treatment systems by collecting not only outcome measures but also structure and efficiency measures.

The nineteen TOPPS II project States, under cooperative agreements, with CSAT, are attempting to develop a standardized approach that can also be used to systematically measure the performance of treatment under the Substance Abuse Prevention and Treatment Block Grant. One goal of the TOPPS-II initiative is to enable project States to collect information on SAPT Block Grant funded treatment services and monitor common substance abuse treatment effectiveness data measures across various State management information systems (MIS). This program will support initiatives to design or enhance State MISs or outcomes monitoring systems (OMSs) which examine treatment effectiveness and costs through standardized performance and outcome measures.

States provided feedback on the FY2000 Substance Abuse Prevention and Treatment Block Grant Application and reporting process for use in this study. Twenty States of the 34 States responding indicated they are not currently able to submit the voluntary performance measurement data. However, there are some federal initiatives in place that will provide support to the States in developing their data infrastructure. It is expected that in the future increased web-based reporting capabilities will eventually decrease the financial and time burden on the States. Additionally, common data that would be beneficial to all States in gauging their treatment outcomes and demonstrating accountability in the use of public funds for substance abuse treatment services nationwide could be provided.

5.3 Conclusions and Recommendations

The qualitative Meta-analysis of State outcome studies performed by NASADAD produced positive results that show that treatment is effective under virtually all conditions and methodologies. Data was reviewed, compared, and analyzed according to four SAPT treatment effectiveness indicator areas, two additional indicator areas, other variables that impact treatment, and other related studies. Operational definitions for the outcome measures and the measures themselves were varied across States. Evaluation periods (measurement points) were variable as well. The analysis revealed many differences among the studies in design but also

revealed the similarities in results across the States. In general, positive results indicated that treatment was effective regardless of which indicator and measure was used and regardless of setting, modality, or target population.

The approach of conducting studies and measuring treatment outcomes under the four treatment effectiveness indicator areas and other relevant indicator areas is an important and fruitful one. Efforts to refine the measures and determine the most valuable ones for evaluation the effectiveness of treatment are encouraged. It is essential to develop systematic approaches and standardized measures for conducting research to evaluate the effectiveness of treatment. The application of more standard systemic methods and measures in this area could generate more comparable and specific results that could lead to the identification of specific treatment models and approaches that work and are the most effective.