Effectiveness Standards for the Treatment of Chemical Dependency in Juvenile Offenders: A Review of the Literature

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Report to the Governor's Office
and Legislature of Washington State

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Technical Report 98-01 January 1998

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ACKNOWLEDGMENTS

This research is funded by the Washington State Department of Social and Health Services. This review of the literature on adolescent chemical dependency treatment would not have been possible without the help of Mark Wirschem of the Juvenile Rehabilitation Administration, Antoinette Krupski, Ph.D., of the Division of Alcohol and Substance Abuse, Dennis Donovan, Ph.D, Peggy Peterson, Ph.D., Nancy Sutherland, Brenda Stuvek, and Ellen Downey of the Alcohol and Drug Abuse Institute.

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EXECUTIVE SUMMARY

I. BACKGROUND

House Bill 3900 (Sec 26-28) requires the development, implementation, and evaluation of the Chemical Dependency Disposition Alternative (CDDA) program, which provides local juvenile courts with a sentencing alternative for chemically dependent youth. Following an assessment to determine that the juvenile is chemically dependent,

> ...the court shall then consider whether the offender and the community will benefit from use of this chemical dependency disposition alternative. If the court determines that this chemical dependency disposition alternative is appropriate, then the court shall impose the standard range for the offense, suspend execution of the disposition, and place the offender on community supervision for up to one year. As a condition of the suspended disposition, the court shall require the offender to undergo available outpatient drug/alcohol treatment and/or inpatient drug/alcohol treatment (RCW 13.40.165 5a, 5b).

The University of Washington was mandated by this statute to develop standards for measuring the effectiveness of chemical dependency treatment programs for CDDA youth. These standards must include methods for measuring success following treatment of CDDA youth. The following report responds to the statute and describes the scientific basis for the chemical dependency programs for CDDA youth.

The CDDA legislation provides an opportunity for the Juvenile Rehabilitation Administration (JRA), in conjunction with the Division of Alcohol and Substance Abuse (DASA) and local juvenile courts, to strengthen existing chemical dependency programs for youth involved with the juvenile justice system. This will be accomplished by providing CDDA youth with additional elements of treatment that research has demonstrated to be effective in reducing substance use. Treatment of CDDA youth will emphasize enhancing linkages with community based services in order to provide a comprehensive continuum of care. Effectiveness of CDDA treatment programs can be assessed using changes in variables which research has demonstrated to be critical in the development and maintenance of adolescent substance use problems (such as school performance and emotional distress).

II. EFFECTIVENESS STANDARDS

Effectiveness standards for treatment programs should address three factors: changes in adolescent behaviors with regards to substance use, criminal activity, and overall adjustment; program implementation and integrity; and, compliance with reporting requirements of the Juvenile Rehabilitation Administration, as well as the Division of Alcohol and Substance Abuse assessments and treatment standards for State-approved programs under WAC 440-22, and other involved agencies.

A. Changes in Adolescent Behavior

It is impossible to require that chemical dependency programs reduce substance use or criminal

activity by a specific amount as each individual will have varying degrees of substance use, criminal involvement, and other problems at entry to treatment. Although an adolescent may not demonstrate a substantial decrease in substance use after treatment he may show improvement in other areas such as family and school functioning. It is important, therefore, to look at overall improvements in functioning after treatment and not solely at substance use or recidivism. Ideally, an effective treatment program will reduce an adolescent's involvement in substance use and or criminal activity, effectively treat psychopathology (if present), and will increase the level of family and social adjustment, and school/vocational performance. Some effective programs may not, however, be successful in modifying all problematic behavior in every individual treated.

1. Reductions in substance use will be assessed by:

- the frequency of substance use; the primary measure will be a reduction in the total number of days of use over the intervening period
- the intensity of substance use; the primary measure will be a reduction in the number of times a day a drug is used
- the number of substances an individual currently uses
- the proportion of positive urinalyses collected over the intervening period
- the number of re-convictions for alcohol or drug related offenses in the intervening period
- re-admission to a chemical dependency treatment program (detox, inpatient, or outpatient) over the intervening period
- the number of emergency room visits
- the number of inpatient medical hospitalizations
-

2. Reductions in recidivism will be assessed by:

- the number of subsequent convictions incurred over the intervening period
- a subsequent conviction is any court legal action including a conviction, deferred disposition or diversion agreement in a Washington State court for an offense committed following the initial action that made the youth eligible for the CDDA program
- felonies and misdemeanors, including gross misdemeanors, will be reported separately
- the number of violations of the terms of community supervision
- violations are usually not criminal actions
- probation officers vary greatly in their reporting of violations
- this is a difficult area to measure as violations typically increase as the level of supervision becomes more intense resulting in a potentially ambiguous and misleading measure of program effectiveness
- completion of any restitution to victims ordered by the court
- the amount of the restitution will vary
- measures will include whether a youth is failing, successfully completing, or has fully completed restitution

The number of arrests incurred over the follow-up periods will not be used as a measure of criminal recidivism in evaluation of the CDDA programs. Arrest data are difficult and costly to reliably obtain because there is no statewide database for arrests. Therefore, until there is a statewide database for arrests, arrests will not be used in determining effectiveness of chemical dependency treatment programs for CDDA youth.

3. Improvements in other areas such as:

- Improved school performance over the intervening period as evidenced by:

- an improvement in grades
- a decrease in truancy or drop-out
- a decrease in the number of disciplinary actions
- Improved family functioning over the intervening period as evidenced by:
- fewer conflicts with family members
- greater parental satisfaction with adolescent's behavior
- decreased runaway episodes
- Improved social functioning over the intervening period as evidenced by:
- less time spent with substance-using and/or delinquent peers
- increased friendships with prosocial peers
- decreased feelings of alienation
- fewer incidences of unprotected sexual activity
- Improved psychological functioning over the intervening period as evidenced by:
- fewer days of self reported mood disorders
- fewer days of aggressive or hostile acts towards family, peers or others
- fewer days of antisocial behaviors
- greater ability to concentrate on tasks
- fewer admissions for psychiatric treatment, either inpatient or outpatient
- decreased use of psychiatric medications
- Improved vocational functioning (if applicable) over the intervening period as evidenced by:
- fewer absences from work
- fewer days of late attendance or leaving early
- fewer disciplinary actions
- more positive relationship with co-workers

B. Program Implementation and Integrity

If a program is not actually delivering the services contracted for by CDDA, it may be wrongfully evaluated as being ineffective. If the proposed services actually were provided by the treatment program, the program may have been effective in treating adolescent chemical dependency problems. For example, family involvement in treatment has been shown to be related to positive treatment outcomes. If a treatment program for CDDA youth does not actually provide family therapy as recommended, adolescents in that program may not reduce their substance use to the same degree as adolescents treated in a program that did include family therapy. Therefore, in order to determine program effectiveness and success in delivering proposed services the following factors will be assessed:

- the level of service adherence to treatment guidelines for chemical dependency treatment programs for CDDA youth
- the number of direct treatment hours provided
- the overall program completion and drop-out rates
- the degree to which adolescents and their families are satisfied with the treatment program
- the degree to which the CDDA programs are successful in linking JRA supervision services, community-based services, and families (or family substitute) in treatment of the youth

C. Reporting Compliance

The agency's ability to meet regular deadlines will have a bearing on the evaluation of its effectiveness. Regular reporting to the Juvenile Rehabilitation Association, the Division of Alcohol and Substance Abuse, and the University of Washington research team will be considered an essential element of a successful treatment program.

III. CHEMICAL DEPENDENCY TREATMENT FOR ADOLESCENTS

Based on a review of the literature provided in the report, the ideal chemical dependency treatment program for CDDA youth would include the following:

A. Assessment

- a structured clinical interview to determine DSM-IV diagnoses of substance dependence, abuse or use
- a comprehensive evaluation addressing the following areas:
    - substance use history
    - medical health
    - developmental issues
    - school and vocational history
    - strengths or resiliency factors
    - conduct disorder behaviors
    - criminal involvement
    - psychopathology, such as depression and hostility
    - familial relationships
    - history of physical, sexual, or emotional abuse
    - peer relationships
    - current living conditions
    - sexual activity
    - leisure activities

Treatment placement decisions should be made based on findings from these evaluations.

B. Elements of Effective Treatment

Based on a review of the literature it is recommended that all CDDA treatment programs, regardless of modality, should, ideally, include the following elements:

- treatment should be delivered in the least restrictive setting, while considering issues of community safety
- treatment should be comprehensive and address the problems identified by the evaluation process (e.g., psychiatric disturbance, sexual abuse)
- treatment must involve the family, or a family substitute, in all aspects of treatment planing, discharge recommendations, and continuing care
- family therapy an cognitive-behavioral therapy should be primary therapeutic techniques
- general life skills, decision-making, and coping skills education and training should be provided
- relapse prevention should be stressed
- treatment should be a continuum of care, meaning upon discharge from a program additional services are provided, in decreasing frequency, so that each adolescent will have services available for at least 12 months

It is recommended that the treatment fidelity of the chemical dependency programs for CDDA youth be evaluated at six month intervals, at least initially, to determine whether similar services are being delivered by different chemical dependency treatment programs (e.g., all outpatient programs all provide the same type and intensity of services).

C. Continuum of Care

Reported relapse rates as high as 71% for adolescents 3-6 months following treatment indicate the need to provide additional support if abstinence is to be maintained. Although results regarding aftercare are inconsistent, the most promising treatment approaches for substance abuse treatment of juvenile offenders include a continuum of care for 12 months. Therefore, it is recommended that all CDDA youth be provided a continuum of care, ideally over a 12 month period. The intensity of treatment should vary over the 12 months based on the adolescent's needs and treatment plan. A 12 month continuum of care would enable practice and monitoring of new prosocial skills acquired in the primary treatment assignment. It is recommended that treatment services provided in the continuum of care utilize familial and community resources. Ideally, this would mean that:

- a team of individuals, including substance abuse treatment specialists, teachers, parents, probation officers and social service agency case managers, work in cooperation to provide a continuum of care
- a proportion of the services be delivered in the home at the convenience of the family
- strengths of the family and adolescent are stressed
- a flexible approach involving numerous therapy techniques is taken in treating the family and adolescent
- prosocial behaviors are reinforced
- relapse prevention is stressed
- formation of a pro-social peer group is strongly encouraged
- urine drug screens are randomly taken on adolescents. If results are positive, the frequency of treatment is increased
- frequency of therapy slowly decreases over time, allowing for practice and monitoring of treatment gains and the success to which those gains are integrated into daily community life

IV. EVALUATION OF CDDA TREATMENT PROGRAMS

The CDDA legislation provides an opportunity for the Juvenile Rehabilitation Administration (JRA), in conjunction with the Division of Alcohol and Substance Abuse (DASA) and local juvenile courts, to strengthen existing chemical dependency programs for youth involved with the juvenile justice system. This will be accomplished by providing CDDA youth with additional elements of treatment that research has demonstrated to be effective in reducing substance use. Enhanced linkages with community based services in order to provide a comprehensive continuum of care will be emphasized. The CDDA program provides an opportunity to evaluate the process, and any difficulties that may arise, in implementation of the CDDA legislation. Effectiveness of these treatment programs can be assessed using changes in variables which research has demonstrated to be critical in the development and maintenance of adolescent substance use problems (such as school performance and emotional distress).

Furthermore, the CDDA program provides the opportunity to evaluate the short term (6 month) and long term (18 month) effectiveness of this sentencing alternative in reducing substance use and recidivism in juvenile justice involved youth.

To determine whether the chemical dependency programs for CDDA youth are successful in decreasing substance use and delinquency, it is recommended that evaluations of outcome measures for CDDA treated adolescents, and the comparison groups be performed at several time points including:

- at baseline, the date of the court-ordered CDDA disposition

- upon discharge from the initial treatment placement (e.g., detention based treatment, inpatient treatment); this evaluation will provide data on the decrease in substance use achieved during the initial treatment and act as a baseline measure of substance use and general functioning for the continuing care component of CDDA treatment
- at 6,12, and 18 months following the date of the court-ordered CDDA disposition.

Data regarding substance use and criminal activity will be corroborated at each evaluation through the use of urinalysis, criminal histories, and whenever possible by interviews with parents, probation officers and other individuals involved in the adolescent's treatment .

A. Measurement Timeframe

Several time frames will be utilized in measuring substance use, criminal activity, and other problem area outcomes:

- measures will focus on the 30 days prior to each evaluation
- measures will focus on the six month follow-up periods (i.e. 6, 12 and 18 months)
- measures will focus on the entire 18 month follow-up period

At least initially, a few treatment programs with a large census should be utilized. This procedure will provide large enough sample sizes that statistically significant differences are more likely to be revealed by data analyses if they exist. By utilizing fewer programs and appropriate comparison groups, one can be more confident in concluding that any outcome differences are truly an effect of the program intervention and not due to some other factor.

A detailed description of the proposed CDDA evaluation is provided on pages 53-56 of the full report.

INTRODUCTION

House Bill 3900 (Sec 26-28) requires the development, implementation, and evaluation of the Chemical Dependency Disposition Alternative (CDDA), which provides local juvenile courts with a sentencing option for chemically dependent youth. Following an assessment to determine whether the juvenile is chemically dependent,

> ...the court shall then consider whether the offender and the community will benefit from use of this chemical dependency disposition alternative. If the court determines that this chemical dependency disposition alternative is appropriate, then the court shall impose the standard range for the offense, suspend execution of the disposition, and place the offender on community supervision for up to one year. As a condition of the suspended disposition, the court shall require the offender to undergo available outpatient drug/alcohol treatment and/or inpatient drug/alcohol treatment (RCW 13.40.165 5a, 5b).

The University of Washington was mandated by this statute to develop standards for measuring the effectiveness of chemical dependency treatment programs for CDDA youth. These standards must include methods for measuring success following the youths' treatment. The following report responds to the statute and describes the scientific basis for the CDDA intervention programs.

The key components of this report include:

- a review of chemical dependency treatment outcome research for adolescents generally and juvenile offenders specifically
- an overview of factors that predict substance use problems and positive chemical dependency treatment outcomes in adolescents
- a review of assessment procedures and instruments currently in use for screening, and comprehensive evaluation of adolescents with chemical dependency problems.

Based on information contained in this literature review, essential components for effective treatment programs and effectiveness standards to evaluate treatment efficacy are proposed.

BACKGROUND

Substance abuse and criminal involvement are two of the most serious problems among today's youth. Substance abuse is common among juvenile offenders with an estimated 82% of youth committed to the Juvenile Rehabilitation Association (JRA) in Washington defined as being either dependent on, or abusing, alcohol or other drugs (JRA, 1997). A recent report prepared for the Washington State Division of Alcohol and Substance Abuse on adolescent drug treatment reported that following treatment 36% of treated youth had remained abstinent for six months (New Standards Inc., 1995). Similar post-treatment relapse rates for adolescents have been noted elsewhere (Brown, 1990). In order to better meet the needs of juvenile offenders by providing interventions which research has demonstrated to be effective in reducing substance use and criminal behavior, the legislature approved HB 3900 (Sec 26-28) which requires the development, implementation, and evaluation of the CDDA program.

While drug treatment is at the core of CDDA, it is essential that other issues which contribute to the problems these adolescents face, and in turn the crimes they commit, be addressed concurrent with treatment for chemical dependency. Mental health problems, for instance, are extremely common among adolescents who abuse drugs. A study of 192 adolescents who received inpatient chemical dependency treatment in Washington during 1996 found that 65% of the youth had received mental health services and 45% were taking prescription medication for mental health problems (Peterson, 1997).

A. Adults Versus Adolescents

Prior to 1985 most substance abuse treatment programs for adolescents were the same or very similar to those for adults. In fact, adolescents were frequently treated in the same physical settings as adults (Brown, 1990). Research has since demonstrated that it can not be assumed that salient factors in the establishment, maintenance, and treatment of substance abuse and to a lesser degree, delinquency, are the same for adults and adolescents. Compared to adults, adolescents have shorter periods of substance abuse, greater involvement with alcohol and marijuana, are more likely to be poly-drug abusers, and have shorter criminal histories. The need for family support and educational assistance is more significant for adolescents in substance abuse treatment compared to adults (Friedman, 1986).

A recent study by Martin (1995) reveals further differences between adults and adolescents. In this study of 181 adolescent drinkers, half of whom were males, Martin found that the severity and pattern of alcohol use differed for adults and adolescents. Adolescents had fewer formal symptoms of alcohol abuse or dependence as measured by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), than did adults, as well as fewer difficulties in occupational functioning. Adolescents had more difficulties in meeting obligations in the home, family, and school domains compared to adults, and were half as likely to report alcohol withdrawal symptoms. With respect to gender differences, adolescent males with alcohol abuse or dependence reported more legal problems, physical fights, and hazardous use of alcohol compared to females with alcohol abuse or dependence. Compared to males, females reported more difficulty maintaining their grades, more impact on their involvement in social activities and more continued alcohol use despite psychological problems as a result of drinking. No racial differences were revealed in the symptom patterns related to alcohol abuse or dependence. It is worth noting, however, that there were a disproportionate number of African Americans who received no diagnosis of alcohol abuse or

dependence.

B. Substance Use, Abuse or Dependence

In the majority of research studies no distinction between dependency, abuse, and misuse, of alcohol or drugs is made. To avoid confusion, throughout this report we will refer to adolescents who are reported to have a substance use problem or be a substance abuser as adolescents with substance use problems. If the reviewed study did indicate a formal diagnosis of chemical abuse or dependency, those terms will be used. It should be kept in mind that the CDDA program proposes to treat chemically dependent youth who may have more severe substance use histories than adolescents included in many of the reviewed studies.

METHODOLOGICAL ISSUES

Research on the efficacy of treatment programs for juvenile delinquents whether focused on reducing criminal activity, substance abuse, or both is still a relatively new endeavor. Prior to discussing outcome evaluations of various forms of treatment, predictors of treatment outcome, and instrumentation issues, it is important that the reader be aware of several methodological issues relevant to research on adolescent chemical dependence treatment.

First, as mentioned previously, no distinction between use, abuse and dependency of alcohol or drug use is made in the majority of research studies. When a distinction is made, it is typically not based on results from a structured clinical interview. The severity of drug or alcohol use can have a profound effect on the evaluation of program efficacy. If program A is treating individuals who are chemically dependent and has poorer overall outcomes compared to program B which treats primarily adolescents who are substance users or abusers, but not substance dependent, it cannot truly be said that program A is less effective than program B. Furthermore, there is no consensus as to what constitutes 'substance abuse' in adolescents (e.g., any use, any regular use, use that causes problems). Attempts to formalize this distinction using criteria from the Diagnostic and Statistical Manual of Mental Disorders -Fourth Edition (DSM-IV; American Psychiatric Association, 1994) are becoming more common. However, this distinction is generally not accomplished using reliable structured clinical interviews. More frequently diagnoses are based on unstructured clinical interviews.

Second, most studies lack an appropriate control group and seldom use randomization procedures when comparing treatment conditions. Use of random assignment is not always possible, however, and in some cases means withholding treatment which is not an acceptable procedure. Use of an appropriate comparison group is usually possible. Without appropriate comparison groups it can be difficult to assess whether treatment outcomes are the result of components of treatment or are due to a normal progression of behaviors such as maturation (Brown, 1993).

Third, the majority of research studies lack measures of treatment fidelity. Without such a measure it is difficult to determine what services were actually provided to the adolescent compared to those that were contracted to be provided. In turn it then becomes difficult to ascertain what specific elements of treatment are most beneficial.

Fourth, there is no consensus as to which are the most appropriate instruments to use in evaluation of adolescent problems and treatment outcomes in general. The reliability and validity of most instruments for adolescents have not been established with juvenile offenders specifically. The majority of studies with information on the reliability and validity of instruments included mainly Caucasian, high school students. It can not be assumed that these instrument will also be reliable with juvenile delinquents.

Fifth, there is no set of consistently used guidelines for making treatment placement decisions. This creates difficulties when attempting to determine program efficacy since similar programs may in fact be treating quite different adolescents (e.g. one program excludes violent chronic offenders, the next program will include such adolescents).

Sixth, treatment dropout rates are often as high as 50%. Measurement of treatment effectiveness and outcome can be biased by differential dropout rates if there are significant differences between those who did and did not complete the treatment program.

Seventh, follow-up rates of treated individuals are frequently well below 80% in outcome studies. Lasting effects from treatment can not be determined unless the majority of treated individual can be asked about their post-treatment functioning. Individuals who are not available for follow-up may or may not have more problems than those who can be reached for follow-up; low follow-up rates can, therefore, substantially bias outcome results.

Eighth, although there is a consensus that there are multiple determinants of substance use and delinquency, most research studies focus on only one or two risk factors.
Finally, only a few studies have evaluated gender and racial differences in the etiology and treatment of juvenile delinquency and substance abuse. Furthermore, the majority of studies have focused on predominately Caucasian populations.

ADOLESCENT SUBSTANCE ABUSE TREATMENT:

A REVIEW OF THE LITERATURE

To meet its legislative mandate, the CDDA program will need to be based upon sound scientific evidence. To this end a thorough review of the literature has been conducted. Many of the essential components of adolescent chemical dependency treatment have been researched and there are numerous programs which can provide insight and direction in the creation of an effective chemical dependency treatment program. This report will focus on research findings relevant to the establishment of the CDDA program and will discuss findings, where they exist, regarding gender and racial differences.

I. CHEMICAL DEPENDENCY TREATMENT FOR ADOLESCENTS

The heterogeneity of substance use is such that it is impossible at this time to recommend one specific treatment modality likely to be effective for all adolescent patients (Henggeler, 1997; Babor, 1991; Hawkins, 1995). What is recommended is the inclusion of specific treatment elements and a continuum of care in all treatment modalities. Substance use and abuse during adolescence is strongly associated with other problem behaviors such as delinquency, precocious sexual behavior, deviant attitudes, and school dropout (Hawkins, 1995; Newcomb, 1989). Substance use should, therefore, not be the only focus of chemical dependency treatment (Newcomb, 1989). The Office of Juvenile Justice and Delinquency Prevention (OJJDP; Henggeler, 1997) recommends that substance abuse treatment programs assist adolescents in acquiring prosocial decision-making and problem-solving skills and provide recognition for demonstration of prosocial behaviors. Additionally, it is recommended that substance abuse treatment programs encourage adolescents to form attachments, whether to parents, teachers, or the community at large, and assist them in finding leadership opportunities that enable them to contribute to their community.

A. Current Treatment Modalities

Several treatment modalities are currently utilized in treatment of adolescent chemical dependency. Most adolescent chemical dependency treatment programs are based on adult treatment models, however, with modifications to address the special needs of adolescents. Brief descriptions of treatment modalities from most restrictive to least restrictive setting are described below.

1. Therapeutic communities (TCs)

Therapeutic communities are drug-free residential programs that view both drug abuse and drug treatment as social, not medical, in nature. TCs are not as common in the 1990s as they were in the 1980s as treatments for adolescent or adult chemical dependency. This is primarily due to the fiscal restriction of today's health care system. Treatment in TC programs typically ranges from 3-15 months or longer. Treatment completion rates for TCs are reported as being only 10-18% in adolescent populations (Henggeler, 1996).

Elements of TCs treatment include (DeLeon, 1986):

- removing the adolescent from family, peers, and community for lengthy periods of time in hopes of establishing new behavioral patterns
- intensive supervision to prevent flight, antisocial behavior, and negative interpersonal

behaviors
- the milieu itself is an important aspect of treatment
- focus on academic functioning to establish age appropriate grade level
- provide a combination of group and individual therapy
- extensive recreational activities to promote group cooperation and constructive use of leisure time
- aftercare recommended following discharge to assist in the transition from a very structured living situation to a family environment or alternative placement, as well as to promote maintenance of gains made in treatment
- the family is involved in the adolescent's treatment in varying degrees

Washington State currently has no TCs for the treatment of adolescent substance use.

2. Residential settings

Residential settings range from medically monitored hospital based placements to boarding schools for high risk youth. The most commonly utilized residential placement for chemically dependent adolescents is an inpatient non-hospital based treatment program. Adolescents with high levels of substance abuse and co-existing psychiatric problems are frequently treated in an inpatient hospital-based setting. Inpatient treatment typically ranges in length from 7-90 days depending on the program philosophy (e.g., AA based, behavioral, multidimensional) and services provided. Residential training schools have also been utilized for treatment of substance use and behavioral problems. These out-of-home placement programs focus primarily on teaching a trade or vocation that the individual can utilize in becoming a productive member of society, but also provide therapy for co-existing problems. More recently there has been the establishment of 'Boot Camps' for troubled adolescents with behavioral and substance use problems.

Residential programs share some features similar to the TCs and include the following elements (Jainchill, 1995):

- an initial short period (few days) of restricted contact with outside environment ("blackout") to enable detoxification from substances and outside stressors
- may or may not include medical monitoring
- a focus on educational needs and often assessment for academic difficulties such as learning disorders or attention deficit hyperactivity disorder
- a combination of group and individual therapy, usually cognitive-behavioral or supportive in nature
- stresses family involvement in treatment to varying degrees
- relapse prevention is a critical treatment component
- may recommend aftercare treatment, but typically does not provide this service
- stresses involvement in community self-help groups upon treatment completion

The most commonly utilized residential treatment for youth in Washington State is non-hospital based residential treatment. Programs contracted with the Division of Alcohol and Substance Abuse (DASA) are designated as "Level I" or "Level II", depending upon the program's ability to address co-existing mental health, psychiatric, and behavioral problems.

3. Outpatient treatment

Outpatient treatment, one of the least restrictive forms of treatment, is utilized extensively in treating adolescents with substance use problems. Outpatient treatment allows the adolescent to remain in his

community providing him immediate opportunity to practice newly acquired skills or behavioral changes learned in treatment. In some cases, outpatient treatment may be preceded by an inpatient or detox treatment program, in other cases it stands alone as a treatment. Considerable variation in outpatient programs exists, but outpatient programs all share some common elements:

- outpatient therapy can be one of many modalities such as, AA based, cognitive-behavioral, supportive, insight oriented, family therapy or a combination of therapies
- there is no standard recommended length for outpatient treatment; length of treatment depends on the level of problem severity, referral and funding source
- intensity of treatment varies; some outpatient treatment, such as day hospitals, may meet five days a week; others may only meet one time a week
- relapse prevention is stressed
- involvement in community self-help groups during and after treatment is typically encouraged

In Washington State, the most common form of outpatient treatment for youth is an intensive outpatient program, which requires DASA certification for seventy-two hours of treatment services within a maximum of sixteen weeks.

4. Community monitoring

If substance use is present, but not yet problematic, substance use may be monitored through regular urinalyses, meetings with a parole or probation officer, or a case worker. In cases where criminal activity or flight is a concern, individuals may also be placed under house arrest, have a curfew, or be electronically monitored.

5. Self-help and other community based groups

Most forms of treatment include participation in a community based support group. Attendance in such self-help groups is often considered a form of aftercare. Self-help groups, such as Alcoholics Anonymous, provide a safe forum to discuss problems with other recovering adolescents. These programs also provide positive role models and emotional support. Programs such as the Big Brothers and Sisters programs can also provide an adolescent with emotional support and a positive role model.

B. Continuing Care and Aftercare

Adolescents appear to be at particularly high risk for relapse after treatment, especially during the first 3-6 months following treatment. In a study of 75 adolescents (average age 15.6 years) treated in an inpatient chemical dependency program, 64% of the adolescents had relapsed by the third month following treatment and an additional 7% relapsed during the 4^{th} - 6^{th} month following treatment (Brown, 1989). Another study of 54 adolescents compared the percentage of adolescents who remained drug free 6 months following inpatient substance abuse treatment (abstainers) to adolescents who had minor relapses (no more than 30 days of substance use in the last 6 months) and those who had major relapses (regular heavy substance use). Of those who completed treatment, only 30% were classified as abstainers for the entire 6 month period following treatment (Brown, 1990). Moreover, a recent study of 139 adolescents who completed an inpatient program reported that 86% of the youth had at least one episode of substance use during the year following treatment (Myers, 1995).

Continued involvement in substance use and illegal activity are thought to be the result of an individual's failure to make a successful transition from the treatment setting to independent living. It is relatively easy for people to temporarily change undesired behaviors; however, it is much harder to maintain those behavioral changes. Individuals may make a serious commitment to abstinence and no involvement in illegal activity, but may not have the ability to fulfill that commitment without additional assistance (Peters, 1992; Beck, 1993). Gradually decreasing the frequency of treatment, or providing additional aftercare, is thought by some to be essential if an individual is to be successful in maintaining abstinence (Baskin, 1983; Brown, 1990; Brownell, 1986; Henggeler, 1991). Aftercare, or continuing care, services, however, should consist of more than just self-help activities (Leukefeld, 1993).

In addition to strengthening skills acquired during treatment, aftercare, or a gradual decrease in primary care, should further assist in the development and maintenance of relapse prevention skills as well as in enhancing the adolescents ability to cope with family, social, and academic and/or occupational difficulties (Peters, 1992). Aftercare programs, and continuing care, should expand positive coping skills and understanding of motivation for drug use that was gained during treatment, while allowing the adolescent opportunity to practice these skills in their own environment (Bry, 1992; Sontheimer, 1993). Such skills and knowledge can greatly enhance the ability to remain abstinent, overcome cravings and urges to use drugs and decrease involvement in illegal activity (Beck, 1993). Therefore, it is recommended that CDDA youth be provided with a comprehensive continuum of care that stresses relapse prevention, positive coping skills, and continuation of gains made during treatment. This should greatly increase the chances for successful treatment outcomes for CDDA youth.

C. Placement Decisions

Appropriate treatment referral is a complex issue and should be based on a comprehensive assessment of needs. It is generally recommended that an adolescent be treated in the least restrictive setting possible (Gartner, 1995; Greenwood, 1993). In treating adolescents who have criminal involvement, however, issues of community safety must also be considered when making placement decisions.

It is not uncommon for a clinician to determine treatment placement based on their own personal experience of who does and does not do well in a particular form of treatment, or on the basis of what services are currently available. In general, treatment placement decisions are made considering the individual's status in several areas of functioning in addition to their substance use problems. Examples of areas of functioning usually considered when determining treatment placement are:

- severity of criminal history
- severity of psychiatric problems
- family situation
- developmental level
- academic or vocational functioning
- presence of physical, sexual, or emotional abuse
- physical health
- interpersonal functioning
- self esteem
- socialization skills
- empathy skills
- community environment

Severe problems in multiple areas (e.g., intravenous drug use, suicidal ideation, and homelessness) typically warrant a residential treatment setting such as an inpatient hospital based program. If an adolescent has few problems other than substance use (e.g., minor mood disturbance, slipping grades, minimally involved in criminal activity) an outpatient program is usually recommended.

There has been only one study, to our knowledge, that attempted to 'match' individuals to a specific form of treatment based on individual characteristics or problem severity profiles. This study of 296 adolescents treated in four outpatient programs and 157 adolescents treated in two inpatient programs across the U.S. found that those with more severe employment, social, family, and to a lesser extent, more psychological problems responded more positively to a longer term outpatient treatment program than a shorter term inpatient treatment. Furthermore, there was a greater reduction in post-treatment substance use for adolescents who were 'matched' to treatment condition using these variables compared to those that were not matched using these variables (Friedman, 1993). These results were only true for adolescents who did not require inpatient treatment for an initial detoxification, protection from overdose, or because they were at high risk for suicide. The authors caution readers that this was an exploratory study that had several methodological problems and further studies are required to determine the usefulness of these variables as treatment matching criteria.

To date, there are no standardized guidelines that are consistently used in making treatment placement decisions. The American Society for Addiction Medicine (ASAM) has proposed a set of detailed criteria for use in determining the most appropriate level of care along a continuum encompassing four levels: outpatient treatment, intensive outpatient/partial hospitalization, medically monitored intensive inpatient, and medically managed intensive inpatient. These criteria are not meant to be treatment/service matching criteria, which would address a broad range of individual needs, but to provide guidelines for placing adolescents with specific combinations of substance use related problems in appropriate levels of safe and cost-effective care (Gartner, 1995).

The ASAM criteria assist practitioners in determining the need for specific intensities of treatment through the use of markers relating to the need for detoxification, treatment resistance, comorbid disorders and relapse potential, as well as safety issues (Gartner, 1995). Although the ASAM criteria were established by a consensus panel of workers in the field and are widely circulated, there are several problems with ASAM criteria (Gartner, 1995). Categorizing levels of care can discourage individualized treatment plans. Also problematic is the treatment framework which does not allow for a gradual reduction in treatment intensity. The ASAM system can be difficult to use if a clinician does not have extensive experience with substance abuse patients. Furthermore, recommended treatment modalities are not always available, especially when inpatient treatment is recommended. Most problematic, however, is the fact that there are currently no reliable ways to measure the dimensions of functioning in adolescents assessed by ASAM criteria (Gartner, 1995). Nevertheless, ASAM criteria are still the most comprehensive and widely used placement criteria for determining chemical dependency treatment modality.

The ASAM criteria are currently used by many Washington Division of Alcohol and Substance Abuse treatment programs to determine level of care. For the most part, decisions regarding placement of CDDA youth will be determined by juvenile courts who will not be utilizing the ASAM criteria. Since juvenile courts are typically in need of clinical input and guidance, it is recommended that DASA, in conjunction with JRA, provide juvenile courts a set of uniform

guidelines regarding problem severity that can assist them in making appropriate CDDA treatment placement decisions.

Cultural factors should also be considered in treatment placement decisions. For some adolescents an out of home placement can severely disrupt family bonds. For some Native Americans and Pacific Northwest Indians it has been found that removing youth from their family can cause intense emotional strain, which can become counterproductive to treatment (Dinges, 1993). Therefore, it may be advantageous to place such adolescents in a more intensive outpatient setting even when inpatient treatment may seem more appropriate, or to make sure that if the adolescent is in an inpatient setting that there is frequent family contact.

D. Treatment Outcome Studies

1. Studies prior to 1990

There is a scarcity of outcome studies on adolescent chemical dependency treatment. Prior to the 1990s most studies of adolescent chemical dependency treatment lacked scientific rigor and were mainly descriptive in nature. Overall, the treatment programs evaluated appeared to reduce so-called hard drug use in adolescents, but were not always successful in reducing use of alcohol and marijuana.

For example, data from the Drug Abuse Reporting Program (DARP) evaluated drug use in 5,406 adolescents who completed inpatient or outpatient treatment compared to those who did not complete treatment. The DARP treatment programs were aimed primarily at treating adult opioid abusers and were not specifically addressing adolescent alcohol and other drug use. Although there was a reduction in opioid use and criminal activity in treated adolescents, the majority of adolescents still used alcohol and marijuana extensively a year after treatment. Use of alcohol actually increased for treated African American adolescents (Sells, 1979).

In the Treatment Outcome Prospective Study (TOPS), 240 adolescents were evaluated one year after attending at least three months of either an inpatient or outpatient program. Adolescents treated in inpatient programs had more positive outcomes than those treated in outpatient programs. For inpatients, daily marijuana use decreased from 79% at treatment entry to 12% at the follow-up. Heavy alcohol use decreased from 54% to 41%, and criminal activity decreased from 53% to 36% over the follow-up period. For outpatients, there was a similar decrease in rates of criminal activity and alcohol use, but marijuana use increased from 48% to 58% during the follow-up period (Hubbard, 1983).

Early research did demonstrate the importance of length of time in treatment with outcome status. Using data from the Pennsylvania Data Collection System for 4,738 adolescents, discharge status of individuals treated in residential therapeutic communities (TCs) was compared to that of individuals treated in drug-free outpatient programs. Results indicated that for the TC subjects, length of time in treatment was the greatest predictor of improvement. The longer the length of stay, the more positive was the treatment outcome. For outpatient programs, length of time in treatment, however, was negatively related to outcome status (Rush, 1979). The authors concluded that adolescents who received inpatient care typically had more severe problems than those receiving outpatient treatment and therefore, required a longer period of time in order to successfully address their problems. Those adolescents who remained in outpatient treatment longest tended to have more severe problems compared to those who left outpatient treatment earlier. It was hypothesized that adolescents who

remained in outpatient treatment the longest were generally less capable of achieving gains compared to those who completed treatment earlier. A 1986 study of client characteristics associated with positive substance abuse treatment outcome evaluated 5,000 adolescents treated in outpatient programs. Length of time in treatment, fewer previous admissions, being Caucasian, and having a primary drug problem other than marijuana were found to predict the greatest reductions in drug use (Friedman, 1986). These studies indicate that adolescents who are able to function in the community while receiving treatment have a better chance of doing well in outpatient treatment compared to those who require a more insulated environment to work on their problems.

Reviews (meta-analyses) of numerous studies of residential and outpatient programs for adolescents prior to the 1990s suggest that although the setting for treatment is important, the specific elements of treatment may actually be more meaningful (Anglin, 1990; Garrett, 1985). Cognitive-behavioral therapies, life skills training, family therapies, multimodal treatments that address numerous problem areas, and aftercare appeared to be the most effective approaches in reducing substance use in adolescents. Findings from more recent studies appear to confirm these early observations.

2. Studies since 1990

Studies of substance abuse treatment for adolescents since 1990 are still relatively limited in number. Research, for the most part, has focused primarily on more traditional inpatient and outpatient substance abuse treatments. With a few exceptions, research results have found negative or inconsistent results regarding efficacy of single modality substance abuse treatment programs. Some of the more promising approaches combine multiple modalities of treatment, e.g. inpatient followed by intensive outpatient followed by aftercare.

a. Inpatient programs

Findings from studies of inpatient treatment have shown some encouraging results. For example, a 1991 study of 98 males and 59 females in an inpatient treatment program based on AA philosophy revealed that although there was some continued substance use, treated adolescents demonstrated improved social functioning, and higher abstinence rates compared to noncompleters at a 6 month follow-up (Alford 1991). Most interestingly were the differences in reductions of drug use for males and females. For males, abstinence rates for completers dropped from 71% at the 6 month follow-up to 48% at the one year follow-up, but increased from 27% to 44% for noncompleters. At the 2 year follow-up there was no difference in abstinence rates between male completers and noncompleters. For females, however, differences in abstinence rates between completers and noncompleters were maintained at the 6 month (79% versus 30%), one year (70% versus 28%), and two year follow-up (61% versus 27%; Alford 1991). Results also demonstrated that regardless of being a treatment completer or not, those who attended AA at least weekly were significantly more likely to be abstinent at the 2 year follow-up compared to those who did not attend AA regularly (84% vs. 50%).

A 1997 unpublished report of 366 adolescents who completed inpatient substance abuse treatment in Washington State reported that 14% remained abstinent for the full 18 months following treatment and 41% had been abstinent for the 6 months preceding the 18 month follow-up (New Standards Inc., 1997). Considerable improvements in academic, psychiatric, family/social and legal functioning were also observed. Moreover, abstinence rates for those who completed aftercare were twice as great (66% versus 30% were abstinent for at least 15 months of the 18 month followup period) as for those who were still in or did not attend aftercare. Similar to previous findings, a longer inpatient stay was associated with a more positive treatment outcome.

Another 1997 study compared chemical dependency treatment outcomes of 249 male and female juvenile delinquents assigned to 2 months of residential treatment to outcomes of 222 delinquents assigned to standard supervision with a probation officer. After two months of residential treatment 130 adolescents were then assigned, based on location of their residence, to receive 4 months of aftercare. Results indicated that those in the residential setting reported significant decreases in self-reported drug use and had a longer time to re-arrest compared to those in standard supervision. The aftercare component, however, appeared to have little benefit. In fact those in aftercare reported more delinquent behaviors and drug related crime compared to those not in aftercare. The authors suggested that the aftercare program may not have been comprehensive enough to meet the complex needs of these adolescents. Furthermore, the increased monitoring of substance use in the aftercare group provided greater opportunity for detection of technical violations of supervision and hence a greater likelihood of re-incarceration (Sealock, 1997).

b. Outpatient programs

An unpublished evaluation of 105 adolescents who completed outpatient substance abuse treatment in Washington State reported an 18 month post-treatment abstinence rate of 23% and an abstinence rate of 51% for the 6 month period preceding the 18 month follow-up. As found for inpatients, there was also an overall improvement in all areas of functioning following treatment. In this study, participation in aftercare was also associated with greater reductions in drug use than non-participation in aftercare (New Standards Inc., 1997).

This report did not focus on the therapeutic techniques used in the outpatient treatment programs, but most published studies of outpatient therapy typically compare various therapeutic interventions. Two types of treatment have demonstrated relatively consistent positive results: family therapies and cognitive-behavioral therapies (Henggeler, 1995; Sealock, 1997). For example, a 1992 controlled study evaluated three forms of adolescent outpatient therapy. Adolescents and their families were randomly assigned to either family systems therapy (FST, n = 31), adolescent group therapy (AGT, n= 23), or family drug education (FDE, n= 28). Controlling for time in treatment, FST appeared to be more effective in reducing drug use (54% abstinent) compared to the AGT (16% abstinent) or FDE (28% abstinent) over the course of treatment. FST also improved overall family functioning and other problem behaviors more than the other treatments (Joanning, 1992). Families and the adolescents were not, however, evaluated at a later date to determine post-treatment effects.

A study comparing 15 adolescents who received 6 months of outpatient behavioral treatment with 11 adolescents receiving 6 months of outpatient supportive therapy found positive effects for behavioral therapy. For those in supportive therapy 91% continued to use drugs in all but one month of the 6 month study. For adolescents in behavioral therapy, 73% used alcohol or other drugs during the first month, but this rate decreased to 27% by the sixth month. Frequency of alcohol or other drug use increased to about 9 days a month from 7 days initially for the supportive group, but decreased from 9 days to approximately 2 days a month for the behavioral group over the six months of treatment. Relative to pre-treatment use, alcohol use in the behavioral group decreased about 50% over the study period, while increasing about 50% for the supportive group. Additionally, there was a significant decrease in self-reported levels of depression for the behavioral group, but a slight decrease for the supportive group. Parental satisfaction with their adolescent's behavior also increased during treatment from 42% to 72% in the behavioral group, but remained around 50% for the supportive group (Azrin, 1994).

Results from the aforementioned inpatient and outpatient studies point to the importance of evaluating more than just substance use outcomes in assessing the efficacy of chemical dependency treatment programs. Following substance abuse treatment an adolescent may still demonstrate some substance use, but significant gains in other areas of functioning such as mental health, family relations, and criminal activity may have occurred, resulting in an improvement in overall functioning.

c. Multidimensional programs

Substance abuse treatment programs that address multiple problem areas are becoming more common and represent some of the most promising approaches for treatment of adolescent chemical dependency.

1. The Nokomis challenge program

Recently a sentencing alternative program for juvenile offenders with substance use problems, similar to the proposed CDDA project, was evaluated in Michigan. The Nokomis Challenge Program was a joint venture between public and private sector agencies and the Michigan Department of Social Services for adjudicated male juvenile felony offenders ages 14-18. The program was 12 months in duration with an 84 day residential component, as well as a 24 day experiential wilderness element. The program was modeled after a medium security training school which utilizes a reward system for appropriate behavioral changes. The residential component was followed by 9 months of community surveillance and continuing treatment. All components of treatment used similar elements such as cognitive-behavioral therapy, experiential education, prosocial skill development, group work, behavior modification, family therapy, and intensive supervision/probation, tracking and electronic monitoring.

Relapse prevention was a key in treatment and included four aspects: (1) identification of problem situations, (2) acquisition of a new skill set, (3) an opportunity to practice and reinforce the new skills, and (4) support in a community setting for integrating these skills into daily living. The residential component focused on the first three elements and the community surveillance focused on the fourth. Families were asked to assist in the treatment planning for their adolescent and were expected to attended biweekly meetings. Failure to do so resulted in the adolescent being returned to the detention center. Community surveillance was intense. Two case workers were generally assigned to each case (Castle, 1996).

A 2 year follow-up of 199 adolescents in a control group and 199 in the Nokomis group revealed that the program was no more effective than incarceration and standard probation in reducing drug use and delinquency, but actually cost $20,000 less per adolescent than incarceration and standard probation (Castle, 1996). Further evaluation of the Nokomis Challenge Program found that compared to a control group, the Nokomis youth had significantly more felony arrests after treatment. However, it was found that the Nokomis program was not properly implemented. For example, many of the required aftercare services were not provided and the control group actually received more family counseling than the Nokomis youth (Deschenes, 1996). The program may have in fact been effective if properly implemented. Results suggest that treatment is effective in reducing recidivism since those receiving the most services, the control group, had a lower arrest rate than those receiving fewer services. This study also indicates the importance of determining that a new program is properly implemented and delivers the proposed services.

2. Multisystemic therapy (MST)

MST is to date the only approach with published results demonstrating short and long term efficacy in reducing substance use and criminal activity in juvenile offenders (Henggeler, 1991). MST is a comprehensive approach to treating delinquency and drug abuse. The goal of MST is to provide a cost-effective family based treatment for antisocial youth. MST is a child focused, family centered intervention directed at solving multiple family problems across settings. It focuses on improving psychological functioning of youth and their families in order to reduce or eliminate the need for out of home placements. MST also focuses on removing the individual from delinquent peer groups and facilitating development of prosocial peer groups, viewing the parents as the key to accomplishing this task. School and vocational interventions seek to improve the individual's capacity for future employment and financial success. A commitment to ensuring that behavioral changes are made in the naturally occurring environment is central to the program.

MST is not a unique therapy but a collection of promising techniques such as strategic and structural family therapy, cognitive-behavioral therapy, and problem-solving and skills training. Therapists must be skilled with all these techniques and have extensive experience in treating adolescents. Therapy is delivered over 2-6 months with decreasing intensity. Many of the services are provided in the home and community settings to enhance family cooperation and increase treatment completion rates. The majority of interventions are done by therapists or by parents with a therapist's guidance. Therapy is directed by a set of intervention principles and change strategies which assume that there are different paths to the same behavior, therefore, treatment plans can be flexible.

Outcome studies of MST have been very promising. A study in South Carolina of 28 families in MST and 19 in usual services found a significant decrease in the use of alcohol and marijuana in the MST group compared to the usual treatment group (Henggeler, 1991). MST has also been found to be substantially less costly than traditional inpatient programs or incarceration (Tate, 1995). In a study of 96 adolescents at risk for an out-of-home placement, MST treated youths had half as many arrests as those receiving usual services a year after treatment. Furthermore, at a four year post-treatment follow-up only 4% of those in MST had a substance related arrest compared to 16% for those in individual counseling (IC). Even when those who dropped out or received very little MST or IC are included in the outcome evaluation the same reductions in drug related arrests were revealed (3% vs. 15%; Tate, 1995).

3. Other promising treatment approaches

In a December 5th 1997 Satellite Conference, the Office of Juvenile Justice and Delinquency Prevention (OJJDP) discussed 3 other promising approaches to chemical dependency treatment for juvenile offenders. The programs discussed were the Escambia County Drug Court in Pensacola, the Denver Integrated Treatment Network program, and the South Carolina Bridge Program. These three programs share similar features:

- results from a comprehensive assessment procedure drive the treatment plan
- treatment is tailored to meet the individual's needs, providing therapeutic, academic, and medical services
- a team approach to treatment is taken
- individuals on the treatment team are all experienced in adolescent substance abuse treatment and are enthusiastic about the program
- treatment is at least a year in duration with frequency of contact decreasing over time
- family involvement is stressed

- there is extensive linking of community agencies and support groups in treatment
- relapse prevention is stressed
- there are frequent home visits for therapy and monitoring of progress
- therapy is strength based and utilizes a variety of techniques including individual and group therapy, cognitive-behavioral interventions, supportive therapy, and even inpatient treatment if warranted

MST also incorporates the features outlined above, with the exception of program length. There are, to date, no published outcome studies on these programs, but a 74% abstinent rate for treatment completers was reported in the conference for the Bridge Program. Re-arrest rates of 5% 18 months after treatment were reported for the Escambia Drug Court participants. The Denver Integrated Treatment Network reported a 19% reduction in recidivism rates over 1 year for treatment completers.

Summary

In conclusion, there are limited studies concerning the outcome of adolescent chemical dependency treatment programs. Results of existing studies indicate that adolescent substance abuse appears to be a complex, but treatable problem. Although there is evidence for the efficacy of both inpatient and outpatient substance abuse treatment, no one specific modality of treatment has demonstrated consistent efficacy in promoting lasting long term decreases in adolescent substance use. Rather than advocating for a specific modality of treatment, research findings suggest that the inclusion of specific elements of treatment are essential for positive treatment outcomes. Several promising approaches to adolescent chemical dependency treatment currently exist. Regardless of the setting, inpatient or outpatient, programs that use comprehensive assessment procedures, address multiple problems using a team case management approach, stress family involvement, use cognitive-behavioral techniques, deliver services in the home, and provide continuing care appear to be the most effective in treating substance abuse.

Using a comprehensive assessment procedure to formulate individualized treatment plans, the CDDA program will offer four different treatment options to chemically dependent juveniles. These programs will be: detention based outpatient, inpatient treatment, comprehensive outpatient, or standard outpatient. Based on results of the previously mentioned research studies, each of these alternatives should include family, social-cognitive interventions and address problems in multiple areas of functioning. The programs should also provide a continuum of care with services available to CDDA adolescents for a 12 month period.

E. Elements Of Effective Treatment

Based on a review of the literature it is recommended that all CDDA treatment programs, regardless of modality, should, ideally, include the following elements:

- treatment should be delivered in the least restrictive setting, while considering issues of community safety
- treatment should be comprehensive and address the problems identified by the evaluation process (e.g., psychiatric disturbance, sexual abuse)
- treatment must involve the family, or a family substitute, in all aspects of treatment planning, discharge, and continuing care recommendations
- family therapy and cognitive-behavioral therapy should be utilized
- general life skills, decision making, and coping skills education and training should be provided

- relapse prevention should be stressed
- treatment should be a continuum of care, meaning upon discharge from a program additional services are provided, in decreasing frequency, so that each adolescent will have services available for at least 12 months

1. Continuum of care

Reported relapse rates as high as 71% for adolescents 3-6 months following treatment indicate the need to provide additional support if abstinence is to be successfully maintained. Although results regarding aftercare have been inconsistent, the most promising recent treatment approaches for chemical dependency treatment of juvenile offenders include a continuum of care. It is recommended that all CDDA youth be provided with a 12 month treatment regimen since the most promising treatment programs provided a 12 month continuum of care. This 12 month period would include time spent in the primary treatment assignment (e.g., 30 days in detention based treatment, 90 days in inpatient treatment) and a continuum of care for the remaining 9-11 months. The intensity of treatment should vary over the 12 months based on the adolescent's individual needs and treatment plan. It is recommended that treatment services provided in the continuum of care utilize familial and community resources. Ideally, this would mean that:

- a team of individuals, including substance abuse treatment specialists, teachers, parents, probation officers and social service agency case managers, work in cooperation to provide a continuum of a care
- a proportion of the services be delivered in the home at the convenience of the family
- strengths of the family and adolescent are stressed in treatment
- a flexible approach involving numerous therapy techniques is taken in treating the family and adolescent
- prosocial behaviors are reinforced
- relapse prevention is stressed
- formation of a prosocial peer group is strongly encouraged
- urine drug screens are randomly taken on adolescents and if results are positive, the frequency of treatment is increased
- frequency of therapy slowly decreases over time, allowing for practice and monitoring of treatment gains and the degree to which those gains are integrated into daily community life

F. Factors Effecting Treatment Response

Even if all elements believed essential for a positive treatment outcome are included in a chemical dependency treatment program there are several other factors that can effect results of outcome studies of substance abuse treatment. The motivation of adolescents treated can effect the overall outcome of the treatment program. Despite being placed in the most appropriate treatment regimen, if an adolescent is not motivated, or ready to change, treatment may have little effect on an adolescent's substance use. Furthermore, if the adolescent is not engaged in treatment and leaves treatment prematurely, he is more likely to continue substance use.

Two additional factors that may effect outcomes are methodological in nature. First, it is important that all individuals who entered the treatment program be contacted for follow-up evaluations. If only subjects who benefited from treatment are available for follow-up it may be incorrectly concluded that the treatment is generally effective. Treatment completion and dropout rates should be considered when interpreting outcome evaluation results. The follow-up rates of an outcome study should, ideally, be above 80%. Second, treatment programs must also actually deliver the

services that they propose to provide. This is frequently referred to as treatment fidelity. If a program can not be successfully implemented it may demonstrate a negative outcome, but if the program had been successfully implemented it may have produced positive results. Many studies of chemical dependency treatment fail to evaluate what services were actually provided to patients.

1. Motivation for treatment and stages of change

The Transtheoretical Model of Change (TTM) states that individuals progress through five stages of change when altering behaviors: precontemplation, contemplation, preparation, action, and maintenance (Migneault, 1997). In this model of change it is also assumed that when acquiring a new behavior one increases the positive ratings of that behavior while decreasing the negative views of it. In ceasing a behavior one tends to increases the negative views of the behavior while decreasing the positive aspects. This balancing of the pros and cons of a behavior is referred to as using a decisional balance (Migneault, 1997). The TTM has been used to investigate many behaviors in adults, but has been used in few studies of behavior change in adolescents.

Only three studies to date have found that motivation level was useful in predicting treatment outcome for adolescents. Two studies done by Friedman and colleagues (1986, 1994) found, based on a few questions regarding the perceived importance of getting help for substance use problems, that greater motivation was associated with more positive outcomes and generally less treatment dropout. Interestingly, adolescents who were highly motivated to obtain employment reduced their levels of drug use less than those who were not interested in obtaining employment. It could be that these adolescents had more stressors and were self medicating or that they had more money for drugs and, therefore, had developed more severe substance use problems that were harder to treat (Friedman, 1994). A study of 234 adolescents revealed that a stronger desire for treatment was moderately associated with a lower frequency of drug use from intake to a 6 month follow-up and a higher likelihood of abstinence over the 6 month follow-up. When the sample was divided into high, medium and low levels of motivation/problem recognition, those with low levels of motivation were found to be more likely to use drugs during the follow-up period compared to those with high levels of motivation (54 vs. 29%). Being prepared to make changes at treatment intake was one of the best predictors of treatment progress (Cady, 1996). No relationship, however, was revealed between level of motivation and the number of days spent in treatment or the likelihood of completing treatment.

Assessing adolescents' level and nature of motivation and readiness for change for chemical dependency treatment is a complicated issue. Adolescents usually enter treatment under pressure from parents or an involved agency, such as JRA and frequently under-estimate the need for treatment and severity of their substance use at treatment entry. Furthermore, there are few established, reliable and valid instruments available for the assessment of motivation or readiness for change in adolescents. The two questionnaires that do exist for assessment of motivation in adolescents specifically, the Problem Recognition Questionnaire (Cady, 1996) and the Decisional Balance Inventory (Migneault, 1997) demonstrate some promise, but have been used only in limited populations. Further evaluation of these instruments is required in order to determine their usefulness in populations of chemically dependent juvenile offenders.

In adults there is an established relationship between intake level of motivation, readiness for change and treatment outcome. Some researchers believe that motivation should be assessed at intake and treatment should be tailored to the individual's readiness for change and motivation (Friedman, 1994). As can been seen from the research studies discussed above, results indicate that there is a

moderate association between level of motivation and the degree of post-treatment drug use. Therefore, the adolescent's motivation is not the sole factor in determining outcome. An adolescent may have a desire to change their substance use, but not have the capacity or opportunity to make those changes (Friedman, 1994). The behavior of the therapist early on in treatment can also have a profound effect on the subsequent behaviors of the adolescent in treatment (Friedman, 1994; Kaminer, 1992). Therefore, it is not recommended by researchers that treatment be denied to individuals based on their level of motivation or readiness for change, but rather that this factor be considered when evaluating the adolescent's treatment outcome (Cady, 1996; Friedman, 1994; Migneault, 1997).

Given the paucity of research on adolescent motivation for chemical dependency treatment, especially with juvenile offenders, and the lack of established means to evaluate motivation, it is not recommended that assessment of motivation be required for the CDDA youth at this time. Currently WAC 440-22 requires the assessment of motivation for adolescents entering chemical dependency treatment programs. This measure of motivation can be utilized in an exploratory analysis of the relationship between motivation and treatment outcome of CDDA youth attending DASA approved programs which must comply with these standards.

2. Treatment completion and dropout

High dropout rates are a serious problem in chemical dependency treatment research. If an adolescent drops out of treatment they are more likely to return to their pre-treatment level of substance use than if they remain in treatment (Stinchfield, 1994). Treatment dropout can be viewed as a lack of motivation to change or possibly as a sign that treatment is not providing the adolescent with appropriate services (Henggeler, 1996). Typically, individuals who remain in treatment are easier to locate for follow-up evaluations, are more motivated to reduce their substance use and have better outcomes than those who fail to complete treatment (Stinchfield, 1994). Outcome results from extant studies with a significant number of non-contacted subjects (usually treatment dropouts) may over-estimate outcome and not be generalizable to the non-contacted group.

Research findings regarding the importance of specific factors in predicting adolescent treatment dropout are generally inconclusive, but do suggest that adolescents with moderate to severe levels of psychopathology are less likely to complete treatment compared to those with low levels of psychopathology (Feigelman, 1987; Stewart, 1994). Only one study has examined gender differences in dropout rates. A study of 93 males and 49 females in drug treatment, average age 16.4, found that for males five variables predicted treatment dropout; heavy alcohol and polydrug use, more self esteem problems, more peer problems, and less use of substances other than alcohol, tobacco, and marijuana were associated with high dropout rates. For females, less poly drug use, and greater self esteem problems were the primary factors associated with high dropout rates (Blood, 1994).

In order to decrease dropout rates several strategies have been attempted. Successful techniques include decreasing the waiting time to enter treatment, providing more frequent treatment contacts, utilizing therapists with high levels of commitment, and provision of concrete services and home visits. Multisystemic Therapy (MST), which is typically delivered in the home has reported completion rates as high as 98% for a 130 day treatment regimen (Henggeler, 1996). Other promising forms of treatment discussed in a recent OJJDP conference also make use of home visits to increase rates of treatment completion. Treatment retention and completion rates for adolescents with less severe substance use problems have been found to be highest for those treated in outpatient

drug free settings. This is especially true for Caucasians (Friedman, 1986). A Washington State evaluation, however, found that treatment completion rates for youth treated in an intensive inpatient program (n=139) were higher (52%) than those for youth treated in a standard outpatient program (n= 435; 27%), or an intensive outpatient program (n= 525; 7%; Wickizer, 1992).

3. Treatment adherence

It can not necessarily be assumed that the services proposed to be delivered to adolescents in a treatment or intervention program are actually delivered. The level of compliance with program objectives is an essential component which can have an impact on the effectiveness of the program. For example, without evaluating treatment fidelity, an evaluation of the Child Developmental Project (CDP), an elementary school based intervention, found only limited evidence that the program reduced rates of alcohol and drug use. When treatment fidelity was considered results indicated that youth in programs with strong or moderate levels of program implementation demonstrated a greater decrease in alcohol and marijuana use compared to youth in the control programs (Battistich, 1996). This program would have been determined to be ineffective if treatment fidelity was not taken into consideration. The evaluation of the Nokomis Challenge Program discussed earlier, provides another example of the importance of assessing treatment fidelity. In that case, the proposed treatment services were not provided as assumed, resulting in the erroneous conclusion that the program was ineffective in treating substance abuse. Furthermore, the control group actually received more services than those in the Nokomis program (Deschenes, 1996).

Summary

Research indicates that in evaluating the efficacy of substance abuse treatment programs it is important to consider the degree to which the proposed services are actually delivered and treatment dropout/completion rates. Each of these factors can have an impact on treatment outcome. Information regarding motivation for change and readiness for treatment for adolescents entering chemical dependency treatment is relatively limited at this time and it is, therefore, not recommended that an evaluation of motivation be performed on CDDA youth.

G. Elements of Program Effectiveness- Program Implementation and Integrity

It is recommended, based on this literature review, that treatment fidelity of the CDDA programs be evaluated at six month intervals, at least initially, to ensure that similar services are being delivered across programs (e.g., outpatient programs all provide the same type and intensity of services). Program implementation and integrity can be assessed by:

- the level of service adherence to treatment guidelines for chemical dependency treatment programs for CDDA youth
- the number of direct treatment hours provided
- the overall program completion and dropout rates
- the degree to which adolescents and their families are satisfied with the treatment program
- the degree to which the CDDA programs are successful in linking JRA supervision services, community-based services, and families (or family substitutes) in treatment of the youth

The agency's ability to meet regular deadlines will also have a bearing on the evaluation of its effectiveness. Regular reporting to Juvenile Rehabilitation Association, Division of Alcohol and Substance Abuse, and the University of Washington research team will be considered an essential element of a successful treatment program.

II. PREDICTORS OF ALCOHOL AND OTHER DRUG USE

Although treatment programs for adolescent substance abuse have proliferated over the last 10 years, there have been relatively few treatment efficacy studies of these programs. Results from the studies that do exist, provide little evidence as to the efficacy of any single approach for treatment of adolescent substance use problems. Across studies there is, however, consistent support for the view that individual characteristics, family, peer, and school variables contribute directly or indirectly to variance in chemical dependency treatment outcomes. The greater the number of risk factors the greater the risk for development of substance abuse and delinquency (Battistich, 1996; Hawkins, 1995). In general, factors influencing treatment outcome can be divided into two groups which are discussed in detail below. These two groups of variables are internal, or personal, variables related to the individual's functioning in a variety of domains (e.g. psychological, academic, interpersonal), and external, or environmental variables (e.g. family situation, peers, community setting).

A. Internal Factors

1. Developmental aspects

Substance use does not invariably lead to a diagnosis of substance abuse or dependence. In a study of 49 males and 52 females followed from age 3-18, adolescents who had experimented with drugs and alcohol were found to be psychologically better adjusted (less anxious, greater social skills, more flexible) than adolescents who had never tried drugs or alcohol, and better adjusted than adolescents who became heavy users of alcohol and drugs (Shedler & Block, 1990). Research has demonstrated that there is a group of adolescents who try minor delinquent behaviors, such as shoplifting and drug use as part of normal rebelliousness during the maturational process. Among these 'normal' adolescents delinquent behavior typically peaks between 15-17, while drug involvement increases during the teen years and peaks in the early twenties. There is, however, another group of adolescents that becomes seriously involved in substance use and criminal activity during their youth and continues that involvement into adulthood. It is likely that there are different etiologies involved in the development of 'experimental substance use' and the more 'life persistent substance use' (Hawkins, 1995; Moffitt, 1993). It is also likely that the majority of JRA adolescents are not merely experimenting with substance use and criminal behavior as part of normal rebelliousness and development, but that these adolescents constitute the group at high risk for ongoing, or life persistent, involvement in substance use and criminal activity as adults.

For those adolescents that are at highest risk for on-going problematic substance use and criminal activity it has been found that the greater the variety, frequency, and seriousness of childhood delinquency prior to age 10, the greater the risk that substance use problems and delinquency will continue into adulthood (Dobkin, 1995; Hawkins, 1995). For females, delinquency often takes the form of truancy, sexual acting out, and prostitution. For males it is more likely to be stealing, aggressive or noncompliant behavior toward authority, sexual and criminal offenses, and academic problems (Moran, 1994).

2. Substance use history

The most important predictor of chemical dependency treatment outcome in adolescents is the severity of prior substance use (Dembo, 1994c, Braukmann, 1985). Early onset of substance use has been associated with more severe psychiatric disorders, more family problems, more academic and occupational problems, greater health problems, and heavier substance use in mid-adolescence (Mezzich, 1992). An earlier age of onset of substance use, greater frequency of recent substance use,

and use of drugs other than alcohol or marijuana have all been associated with negative treatment outcomes regardless of the treatment modality (Hawkins, 1995). Adolescents who begin drinking at a younger age (9 years old) report more days of binge drinking and more drinking in the month preceding incarceration than adolescents who began drinking at a later age (Morris, 1995). Adolescents with severe substance use problems tend to be older, and have used drugs for a longer time than those without substance use problems and this is especially true for males (King, 1996). Somewhat surprising is the finding that younger adolescents (12-14 years old) report more LSD and PCP use compared to older adolescents (15-17). Younger adolescents have also been found to be more likely to receive a DSM-III-R (an earlier version of the Diagnostic and Statistical Manual of Mental Disorders) polydrug abuse or dependence diagnosis compared to older counterparts (Westermeyer, 1994). Certainly young adolescents with substance use problems are at very high risk for exacerbation of drug use and its concomitant problems.

It has been well documented that alcohol is the drug most frequently involved in violent offenses such as assault and murder (U.S. Department of Justice, 1996). As many as 50% of adolescent and young adult murderers report that they were involved with alcohol at the time of their crime and that alcohol use had effected their impulse control (Fendrich, 1995). Recently a connection between marijuana use and delinquency has been reported. A study of juvenile detainees found that individuals whose urine drug screens were positive for marijuana at the time of arrest had twice as many prior non-drug felony arrests compared to juveniles whose drug screens were negative for marijuana. The authors of this study suggest that for adolescents entering the juvenile justice system, heavy marijuana/hashish use may be a marker for serious future delinquency and deepening drug use (Dembo, 1991).

One consistent finding in research on adolescents is that although females typically begin drinking at a later age than males, drinking patterns of males and females do not differ significantly (Morris, 1995; Opland, 1995; Mezzich, 1994). It has also been found in an evaluation of 40 females and 42 males with substance abuse or dependence and conduct disorder diagnoses, recruited from drug treatment and juvenile detention centers, that there were no gender differences in rates of substance use disorder diagnoses or patterns of marijuana use. Results also indicated that generally the first drug used by females is tobacco, while for males it is alcohol (Mezzich, 1994). Gender differences in the use of drugs other than alcohol and marijuana have been reported in the literature.

A study of 1,574 male and 219 female incarcerated adolescents (mean age 15) found that females reported more use of cocaine (42% vs. 30%), crack (9.6% vs. 3.3%), LSD and sedatives (25.6% vs. 13.1%) compared to males. Females also reported beginning use of these drugs at an earlier age than the males (Morris, 1995). For 820 females and 1,461 males with a diagnosis of substance abuse, however, males reported more use of LSD, other psychedelics, and marijuana compared to females (Opland, 1995). Males in this study also reported using marijuana at a significantly earlier age compared to females. Females reported using drugs for emotional escape more than males. Generally, fewer gender differences in substance use patterns are found in adolescents in chemical dependency treatment than those found in high school populations.

A recent study in Washington State of adolescents treated in residential treatment facilities found that the two most commonly used drugs were marijuana (92%) and alcohol (78%), followed by hallucinogens (20%), methamphetamine (11%), and cocaine/crack (11%) (Peterson, 1997). A significantly larger proportion of females than males reported using methamphetamine (22% vs.

5%). Significant gender differences also existed for the primary drug of choice with males more likely to report marijuana as their primary drug of choice (79% vs. 48%) and females more likely to report that alcohol was their primary drug of choice (31% vs. 12%).

A contradiction appears to exist in the literature concerning adolescent substance use problems. Although African Americans are described as suffering most from substance use problems, they appear to have lower rates of substance use relative to other racial groups (Morris, 1995; Van Hasselt, 1993). Generally, the highest rates of substance use problems are reported by Caucasians and Native Americans, and the lowest by African Americans (Morris, 1995; Van Hasselt, 1993). Yet in a study of 1,801 adolescents, relative to Caucasians, African American adolescents were more likely to have been arrested for drunkenness, be victims of alcohol related homicide, and have been incarcerated for alcohol and drug related crimes (Morris, 1995). Adolescent drug use is perhaps the issue of most concern to African Americans (Van Hasselt, 1993). The finding that African American youth have lower rates of substance use is most likely due to the fact that most surveys of adolescent substance use are done in middle class high schools. African Americans are not well represented in these samples due to their higher school dropout rates and lower economic resources (Van Hasselt, 1993). African Americans who are in school are likely to be better functioning and less drug involved than those who have dropped out of school.

The aforementioned studies point to the importance of a detailed assessment of substance use in adolescents. The number of substances used, the frequency (e.g., number of days), and the intensity (amount of a substance used per episode of use) should all be assessed in the CDDA youth at entry to treatment and at each follow-up evaluation. Other indicators of substance use problems that should be measured are the number of convictions for drug related crimes and the number of additional admissions to a substance abuse treatment program following treatment. The proportion of positive urinalysis results for an adolescent can also be used as a measure of substance use severity.

a. Substance Use Relapse

There has been limited evaluation of the cyclical nature of relapse in teenagers (Brown, 1990; Myers, 1993). Although the goal of drug treatment is abstinence the majority of adolescents will have some continued use of alcohol or drugs before obtaining total abstinence. A recent study of 139 adolescents who completed an inpatient substance abuse treatment program found that 86% of the youth experienced at least one relapse during the year following treatment (Myers, 1996). Given that most adolescents in the CDDA program will not be entering treatment of their own free will, it is important to realize that not all adolescents will have total abstinence as a treatment goal.

The cognitive-behavioral model of relapse is based on social learning theory. This model states that certain stressful situations in which an individual has inadequate resources to cope will increase the probability of relapse. Additionally, an individual's response to an episode of occasional use or a lapse will influence subsequent relapse. The model proposes that attributing a lapse to personal failure or a lack of control leads to the expectation of unsuccessful coping in the future, making further use more likely. An emotional reaction of guilt or self-blame also promotes continued use following a lapse. A larger repertoire of problem-and-emotion focused coping skills should, therefore, enable an individual to cope more effectively with stressful situations and avoid relapses (Myers, 1993). It is important to measure more than simply whether or not a youth has remained abstinent. Relapse to any drug or alcohol use is not necessarily the same as a return to problematic use. As described below some studies have made distinctions regarding gradations of relapse.

A study of factors related to relapse was done with 25 females and 32 males 6 months after they had completed an alcohol treatment program. In this study a lapse was considered to be any substance use as long as it did not occur for four or more consecutive days and amounted to less than a total of 30 days over a 6 month follow-up. A relapse was defined as at least 4 consecutive days of use with a brief relapse consisting of 14 or fewer days of consecutive use, and a severe relapse defined as 30 days of consecutive use. Extended abstinence was defined as 30 days of non-use. Social support was the biggest influence on the initial length of abstinence obtained. Abstainers had the fewest peers who continued to use drugs or alcohol, while the relapsers had the highest rates (Brown, 1993). Contradicting the idea that relapsers are exposed to more stressful situations, results found that adolescents who abstained from substance use for 6 months following treatment actually reported more stressful life events compared to those who had major relapses (Brown, 1993). There was a significant relationship between type of coping and total days of alcohol or other drug use, but the type of coping used did not predict categories of use such as minor relapser, major relapser. Use of wishful thinking (e.g., Wish I were a stronger person, Wish I could change what happened) was associated with more total days of use during the 6 month follow-up. Self blame was not found to be an important factor in relapses (Brown, 1993).

3. Academic and vocational functioning

Truancy and school dropout are associated with delinquency and substance use problems (Dembo, 1996; Hawkins, 1995; Ingersoll, 1997; Eggert, 1994). Youths who experience academic success are less likely to be involved in substance use and delinquent behaviors than those with poor academic performance. A study of 2,104 adolescents, average age 15, entering the Juvenile Assessment Center (JAC) in Tampa, Florida (Dembo, 1996) found that although 72% of the sample were still attending school, only 14% were at the age appropriate grade. It is estimated that the rate of substance abuse and corresponding need for treatment is 50% higher in school dropouts than among high school students (Joanning, 1992). A study of 1,000 high school students revealed that risk factors for truancy include low levels of self esteem and personal satisfaction, parental strain such as divorce or separation, and strong bonds with deviant peers (Eggert, 1994). Additionally, academic and behavioral problems at the end of elementary school, but not in grades 1-3, have been found to predict academic and behavioral problems such as substance abuse and delinquency in adolescence.

It is believed by some that adolescents turn to crime and selling drugs as a means of employment not enjoyment (Bradley, 1996). For students with academic under-performance school-to-work programs, which provide academic and job training or career academy programs have demonstrated some success in reducing delinquency and substance use problems. These programs allow the youth to focus efforts on getting a job in a particular area such as nursing or emergency service rather than going to college. Successful school-to-work programs also supply mentoring, intensive counseling, and a curriculum based on real life learning (Ingersoll, 1997). Unemployment and/or a lack of self sufficiency reduces an individual's self esteem. Therefore, new drug treatment programs need to address occupational issues whether using mentoring, tutoring, or some other program to enhance the employability of youth (Bradley, 1996).

While impairment in school performance has been found to differentiate substance abusing females from non-substance abusing females, this is not true for males (King, 1996). With regard to racial differences in academic performance, over a third of African Americans 18-19 years old have dropped out of school. African American's lower perceived benefit of education may be, in part, responsible for poor academic performance (Van Hasselt, 1993).

Clearly there is a strong association between academic performance and substance use. An important outcome of CDDA treatment programs should, therefore, be improved academic performance. Important variables to evaluate include changes in treated adolescents' truancy rates (including skipping classes and the general patterns of school attendance), the number of disciplinary problems incurred, as well as grades. If an adolescent is employed it is expected that effective treatment should also improve vocational functioning. Measures of vocational functioning which should be evaluated include fewer absences (including arriving late or leaving early) from work related to substance use, fewer disciplinary actions, and a more positive relationship with co-workers.

4. Sexual/Physical/Emotional Abuse

Higher rates of substance abuse are reported by teenagers who were abused compared to non-abused teenagers. Roughly a third of female and 17% of male adolescents in substance abuse treatment report some form of sexual or physical abuse (Moran, 1994). Females are more likely to respond to abuse with depression or somatization while males respond with hostility and acting out behaviors. In other words females turn negative feelings inward while males are more likely to externalize their negative feelings (Moran, 1994). These differences are probably a factor of socialization differences that intensify during puberty. Abused female adolescents are also more likely to run away, spend time in detention, and be heavy drug users compared to non-maltreated females. Males who report sexual abuse have significantly higher levels of hostility, interpersonal sensitivity, behavioral problems, and obsessive compulsiveness, but not more drug use, compared to college aged peers with no history of abuse (Moran, 1994).

5. Interpersonal relationships

A 15 year study of youth in San Francisco reported that frequent substance users were more interpersonally alienated, emotionally withdrawn, and manifestly unhappy compared to non-drug users (Moran, 1994). It has also been found that interpersonal alienation at an early age predicts frequent use of marijuana at age 18 (Shedler, 1990). For females, earlier involvement with males can also be a risk factor for development of substance abuse and delinquency (King, 1996). Females with substance use problems are found to be more involved with opposite sex partners compared to non-substance using females, but this is not the case for male adolescents. It has been proposed that females who mature earlier (earlier age of menarche and development of secondary sexual characteristics) are more likely to be assimilated into older opposite sex peer groups. Since these older age peers are more likely to be involved with substance use this association places the adolescent female at greater risk for early substance use (Moffitt, 1993). A study of 28 females, average age 16, recruited from inpatient and outpatient drug clinics, however, found no significant relationship between the age of menarche with age of onset of drug use, frequency of alcohol use, or severity of substance use (Mezzich, 1992).

Studies have also demonstrated that those adolescents who are able to maintain abstinence after treatment tend to have the least exposure to peers who continue to use drugs or alcohol, while those that relapsed had the highest number of peers who continued to use drugs (Brown, 1990;1993).

Studies to date have not addressed racial differences in regard to the significance of interpersonal relationships in the development of substance use problems and/or delinquency.

Decreased feelings of interpersonal alienation should be considered a goal of chemical dependency programs for CDDA youth, since individuals who are less interpersonally alienated appear to be less

likely to be substance users. It will also be important to evaluate the relative amount of time that an adolescent spends with substance abusing peers, as this increases the likelihood of relapse. Establishing relationships with prosocial non-substance peers could also be considered a result of an effective treatment program.

6. Sexual activity

Most youth in a juvenile justice setting are sexually active, have had multiple partners, and have engaged in unprotected sex. In 1990 the Juvenile Court Health Services in Los Angeles County surveyed 1,754 newly admitted juvenile detainees, 14.3% female, and found that 97% of males and 94% of females were sexually active and reported an average of 15 different prior sexual partners (Morris, 1992). Two-thirds of these youths reported never having used condoms. A 1991 survey studied AIDS awareness and knowledge among 219 females and 1,574 males (average age 15) incarcerated in either a short term (less than 3 months, n=451) or a long term facility (n=1,350). Knowledge of AIDS was poor; 15% reported that you could get AIDS from a mosquito, 21.3% were unsure if that was true, and 8.3% believed that you could get AIDS from a drinking glass (Morris, 1995). This was despite the fact that 86.4% of the facilities surveyed provided comprehensive AIDS education. In a 1995 study of 171 juveniles entering a detention center in Virginia, rates of sexually transmitted diseases were significantly higher in females compared to males (65-75% of females tested positive for a sexually transmitted disease compared to 9% of males). Since there was no significant difference in the rates of sexual activity between males and females (76% and 60% respectively), it was hypothesized that differences were due to the fact that females tended to have older age sex partners. These differences may also be because females appear to have greater physiological susceptibility to sexually transmitted diseases compared to males. Female gang members are an especially high risk group as they report high rates of sexual activity and little use of protection in sexual intercourse (Bjerregaard, 1993). Detained youths appear to begin involvement in risky behaviors early on and require early prevention programs regarding the risks for contracting sexually transmitted diseases.

Health care issues, in general, are more prominent for female juvenile delinquents than for males. Female juvenile delinquents use the health care system more than males and used more ‘sick calls’ compared to males. This is most probably a result of higher rates of somatization in the females while males have higher rates of acting out behaviors (Juvenile Justice Programs and Trends, 1996).

A goal of chemical dependency programs for CDDA youth should be to reduce the frequency of unprotected sexual activity in treated adolescents. Given the serious, and potentially life threatening, risks associated with unprotected sexual behavior, discouraging unprotected sexual activity could not only save the adolescent’s life, but also could substantially reduce future health care costs.

7. Psychopathology

In the general adolescent population a strong correlation between substance use and other psychiatric problems is found. Substance use problems in ‘normal’ adolescents have been associated with high rates of antisocial behavior, depressive disorders, attention deficit hyperactivity disorder (ADHD), risk taking and sensation seeking behavior, borderline personality disorder, and suicide (Hawkins, 1995; Grilo, 1995; Neighbors, 1992). A 1997 evaluation of 192 youth served by residential chemical treatment facilities in Washington State found that 65% had received mental health services prior to treatment and that 45% were on some type of prescription medicine for mental health problems (Peterson, 1997).

Treatment outcome studies of adolescents in chemical dependence treatment have found that problems such as mood disorders, conduct disorder, paranoid ideation, and hostility are related to treatment outcome. Results are inconsistent; however, some studies report that adolescents with moderate to high levels of psychiatric severity have more positive treatment outcomes compared to those with low levels of psychiatric problems (Friedman, 1987), while other studies find that more psychiatric problems are related to poorer treatment outcome (Friedman, 1996).

Two pathways in the development of substance use problems have been proposed. The first, 'negative affect alcoholism/substance abuse' proposes that psychiatric symptoms, such as depression, precede substance use. Substance use may occur as a means of relieving or 'medicating' those symptoms. Substance use, however, usually exacerbates these symptoms and ultimately results in greater emotional distress and more overall problems. It has been suggested that this may be the more common pathway for female adolescents (Mezzich, 1992).

The second theory, 'antisocial substance abuse' or 'general deviance syndrome' proposes that substance use is just one of multiple deviant behaviors that are manifest in childhood and adolescence. Substance use, in this theory, is viewed as preceding the onset of psychiatric symptoms. Psychiatric symptoms develop as a result of substance use and other deviant behaviors. This may be the more common pathway to substance use problems and delinquency for males (Mezzich, 1992; Thomas, 1996).

It should be noted that females in the general population have rates of depressive disorders 2-3 times higher than those found in males, but males' rates of delinquency are 5-6 times those found in females. In the general population and in treatment settings, African Americans are less likely to meet criteria for psychiatric diagnoses compared to other racial groups. It appears that although African Americans are faced with greater stress and more risk factors for the development of substance abuse and delinquency (e.g. lower economic resources, more violence and drug use in community), they appear to be more resilient to the cumulative effects of those stressors compared to other racial groups (Vega, 1993).

a. Mood disorders

In chemical dependency treatment programs rates of major depression range from 25-50% (Dembo, 1994b; Mezzich, 1995). It has also been found that among adolescents being treated for severe emotional disturbance the rates of co-existing substance use problems are as high as 48% (Dembo, 1996; King, 1996). The more severe the alcohol and substance use, especially poly-drug use, the higher the rates of depression (Dembo, 1996; Neighbors, 1992). The more severe the depression, the higher the risk for suicide (Dembo, 1996; Eggert, 1994; Neighbors, 1992; King, 1996).

As with adult females, female adolescents are more likely than males to be diagnosed with a mood disorder (Vega, 1993; Thomas, 1996). In female, but not male, adolescents substance use has been linked to prolonged depressive episodes (King, 1996). Females with substance use problems also exhibit higher rates of suicidal thoughts, plans, and attempts compared to males (Thomas, 1996).

Compared to African Americans, Caucasians are reported to have higher rates of depression, suicidal thoughts and actions (Thomas, 1996). In a sample of adolescents at a juvenile assessment center in Florida, African Americans and Caucasians reported similar degrees of emotional distress and substance use, but twice as many Caucasians compared to African Americans had received prior

mental health treatment and three times as many Caucasians had received prior drug treatment (Dembo, 1995). These results suggest that African American adolescents' emotional distress and drug use may not be as problematic for them, but it is also possible that they may in fact require mental health and drug treatment services as much as Caucasians. For African Americans, access to mental health or drug treatment services may be limited by their financial resources or by a lack of availability of such services in their communities. It is also possible that seeking formal mental health services is even less socially acceptable to African Americans than Caucasians, especially given that the majority of service providers tend to be middle class Caucasians (Vargas, 1991).

Depression and suicide are major areas of concern for American Indians and Alaskan Native youth (Dinges, 1993). Results of a study of 124 American Indians and Alaskan Native youth (average age 16) with a diagnosis of depressive disorder found that 76% of the sample received another psychiatric diagnosis. Results also indicate that in these populations, depression precedes substance use problems. Family/parent conflicts and loss of cultural supports were strongly associated with the development of depression, suicidal ideation and suicide attempts in these populations (Dinges, 1993). Individuals in this study were not in a residential hospital setting, but rather in a boarding school that was not well equipped to deal with the adolescents' mental health needs. It will be of utmost importance to assess American Indians and Alaskan Native youth in the CDDA project for depression and suicide risk. Additionally, the family bonds and tribal views on mental health treatment should be taken into consideration when determining treatment placements.

b. Conduct disorder

Conduct disorder (CD) is defined by a pattern of violating the rights of others or violating societal norms and rules. Research demonstrates that CD frequently co-occurs with substance use problems (King, 1996). In a study of 76 male and 62 female adolescents, average age 15, it was found that CD was diagnosed more frequently in patients with substance abuse diagnoses compared to those without substance abuse diagnoses (75.4% vs. 34.8%; Grilo, 1995). It has also been found that the greater the number of CD symptoms the more severe the substance use problem will be (Grilo, 1995; Neighbors, 1992). Results suggest that in many adolescents CD precedes substance use (Riggs, 1995). Individuals that have CD preceding substance use problems may also be the individuals at highest risk for ongoing delinquency and drug use in adulthood.

CD has been found to be more common among adolescent males compared to females (Neighbors, 1992, Dembo, 1995). Interestingly, the presence of CD differentiates between substance and non-substance abusing female adolescents, but not between substance and non-substance abusing male adolescents (King, 1996). CD and alcohol and other drug abuse appear more tightly linked in females than male adolescents (King, 1996). In many delinquent males CD has been found to precede the development of depression and substance abuse (Riggs, 1995). To our knowledge, there is no research indicating racial differences in the rates of CD.

c. Attention Deficit Hyperactivity Disorder (ADHD)

Many adult addicts have reported having difficulties with hyperactivity as children (Meyer, 1992). This finding has resulted in increased study of the relationship of ADHD to substance abuse and CD in children and adolescents. The inability to concentrate and focus can lead to academic difficulties which in turn relates to a higher risk for development of substance use problems. It has also been suggested that for many adolescents ADHD may be associated with earlier onset of CD, depression and substance use (Riggs, 1995). It is currently believed that the combination of ADHD and CD

together places a child at greater risk for substance abuse than the presence of either CD or ADHD alone (Bukstein, 1995). Studies of ADHD in adolescents with substance use problems are currently limited to examining co-morbidity of ADHD and substance use. A study of 1,613 normal youth aged 9-12 found that attention problems were second only to delinquency in predicting the development of problems such as substance use, police contacts, school performance problems, and use of mental health services by youth recruited over a 6 year period (Achenbach, 1995). As with CD, rates of ADHD are five times greater in males than in females. No studies have, to our knowledge, evaluated the impact of ADHD on chemical dependency treatment outcomes. No research to date has examined racial differences in rates of ADHD.

d. Aggression and Alienation

Unlike other predictors previously discussed, most research on aggressiveness does describe gender differences. Research has found that childhood aggressive behavior may be an indicator of adolescent problems. In a sample of 250 African American first graders there was a strong positive correlation between male aggressiveness and level of substance use 10 years later (Hawkins, 1995). Young males appear to be at greatest risk for assaultive violence as they feel the need to prove their manhood (Thomas, 1996).

Research demonstrates that the more severe the drug use the more likely an adolescent is to be involved in fighting (10-20% higher than non drug users; Thomas, 1996). A study of 412 males and 384 females followed from grades 9-12 which assessed beliefs about alcohol use, the age of onset of alcohol, tobacco, and other drug use, and frequency of adverse consequences resulting from substance use, found that aggressiveness and alienation were related to the age of onset of substance use and the frequency of adverse consequences experienced from substance use. Gender differences regarding the impact of alienation with the degree of use, age of onset, and problems associated with substance use were found. Males with low levels of alienation were less likely to use drugs and alcohol compared to males with high levels of alienation. Alienation appeared to be a protective factor for females with regard to onset, degree of use and to a lesser degree, the consequences of use, but had little effect in males on any of these variables. A direct effect between pro-use beliefs regarding drug and alcohol use with the age of onset for drug and alcohol use was found for males, but not for females (Thomas, 1996).

Gang members account for a disproportionate amount of adolescent aggressive and criminal behavior (Juvenile Justice Programs and Trends, 1996). In the Rochester Youth Development study 262 female and 707 male adolescents (67.6% African American) were surveyed at age 13-15 and then 6 months after an intervention. Results indicated that gang members were more likely than non-gang members to have been involved in substance use and delinquency. Risk factors associated with gang membership included low self esteem, poverty, and feeling alienated from family and peers. A study by Elliott (1985) also found that feeling alienated from family and school predicted association with deviant peers (Bjerraard, 1993). The association with deviant peers in turn related to higher rates of substance use and criminal activity as well as gang membership. The possibility of increased sexual activity and membership in a strong peer group were two main reasons reported for choosing to belong to a gang. One gender difference found for gang members was that male gang members had much lower expectations of doing well in school compared to females (Bjerraard, 1993).

With regard to racial differences, in a study of 1,801 detained youth it was found that North American Indians and ‘other’ racial groups were the most likely (87.1% and 77%) to have been involved in at least one fight during the last year, while Asians were the least likely to have been

involved in fights (37.5%; Morris, 1996). North American Native Indians were, however, least likely (35.4%) to be involved with a gang, while Asians were the most likely (65.6%).

Summary

The severity of co-morbid psychopathology can have a profound effect on an adolescent's chemical dependency treatment; therefore, it is important that psychological functioning of CDDA youth be assessed. However, since a thorough psychological evaluation can be costly and time consuming, it may not be possible to perform a full psychological evaluation on every CDDA adolescent to determine the presence or absence of major depression, ADHD, and conduct disorder. In the case of depression, an alternative assessment strategy is to assess depressive symptomatology, such as the number of days that an adolescent has felt depressed or had suicidal thoughts and measure the change in these symptoms from treatment entry to the follow-up evaluations. In the case of ADHD and conduct disorder a similar strategy can be utilized. Adolescents can be queried regarding their ability to focus and concentrate on a task (an indication of the possible presence of ADHD) and school functioning can also be used as an indication of problems in concentration. The presence of behavioral problems associated with conduct disorder (such as theft, violation of curfew) can be evaluated by a series of questions given at entry to treatment and then re-assessed at each follow-up point. The number of aggressive acts that the adolescent engages in over the follow-up periods can be used as an indicator of level of aggressiveness and hostility.

The degree of alienation felt by an adolescent can be ascertained from questions regarding the number of friends that they currently have, how they are getting along with their parents and siblings, and in general by asking directly about the degree of alienation that they experience in relation to their peers and friends (e.g., I feel that I am liked by my classmates). These procedures, as well as considering the number of hospitalizations or treatments for psychological problems, and use of psychiatric medications can all be used to assess general psychological functioning.

B. External Factors

1. Familial factors

In general, adolescents' overall adjustment is related to the nature of their family environment (Brown, 1990). Negative family functioning is the strongest predictor of substance use and other problems (Friedman, 1991,1995; Rhodes, 1990).

Parenting styles have been linked to substance abuse and delinquency (Stice, 1993; Brown, 1990; Tarter, 1993). Parenting ordinarily consists of two elements, control and support. Disturbances in either area can cause problems with regard to substance use problems and delinquency (Stice, 1993; Brown, 1990). A study of 214 female and 240 male adolescents, ages 10.5-15.5, found that adolescents who were raised with either extreme parental control or extreme parental support were at greater risk for developing problem behaviors such as substance abuse (Stice, 1993). There is also some evidence that poor parental supervision and inconsistent discipline practices are predictive of substance use problems and delinquency (Dobkin, 1995; Hawkins, 1995; Dishion, 1988). Conflict in families seems more salient than a broken home per se in the development of substance use and delinquency (Hawkins, 1995). Divorce or separation in the last year, loss of employment in last year, low level head of household occupation, and being abused in the family are all familial stressors found to be related to adolescent substance use (Hawkins, 1995; Stice, 1993; Brown, 1990).

Although there can be a genetic predisposition to developing an addiction, exposure to problem behaviors in the family may be a stronger predictor of an adolescent developing problem behaviors. If an adolescent's parent(s) or siblings are involved in substance use they are more likely to develop a substance use problem than an adolescent whose family does not currently engage in substance use. Furthermore, having a parent or sibling convicted of a crime, or involved in delinquent behaviors is predictive of adolescent criminal involvement (Hawkins, 1995; Dishion, 1988).

Few studies have addressed gender and racial differences in relation to familial factors and development of substance use and delinquency. Familial factors do appear to be more important in the development of substance use in females than males (Friedman, 1991,1995; Hawkins, 1995). The extended family living arrangement, common among African Americans, appears to provide augmented support and resources for the family and is associated with reductions in deviant behaviors. Involvement of the family is crucial in implementing behavioral change in inner city African Americans who rely heavily on their families for support (Van Hasselt, 1993).

There are limited investigations of the relationship between familial variables and adolescent chemical dependency treatment outcomes. Studies have found that a positive description of one's family is associated with better treatment outcome (Friedman, 1991; Stice, 1993). Research shows that family involvement during residential or outpatient treatment is associated with more positive outcomes, and the shorter the residential stay the less disruption to the family bond and community support systems. This results in a greater chance of the adolescent integrating positive gains made in treatment into their community life (Juvenile Justice Programs and Trends, 1996). Having a family environment that is supportive of an adolescent obtaining independence was found in one study to be the best single predictor of improvement in substance abuse treatment (Friedman, 1991).

Genetic risk has not been directly associated with treatment outcome for adolescents, but level of pretreatment exposure to substance abuse has been linked to poorer treatment outcomes. In a 6 month follow-up of adolescents treated for substance abuse, abstainers reported the least exposure to familial alcohol and drug use while major relapsers reported the greatest exposure (Brown, 1990). Results of one study reported that African Americans and Hispanics were more likely than other racial groups to report family substance use (Vega, 1993).

A reduction in family conflicts that arise because of, or related to, an adolescent's substance use problems should be reduced as a result of an effective treatment intervention. A decreased number of adolescent runaway episodes, and an improved rating of parental satisfaction with their adolescent's behavior can be viewed as indicators of reduced family conflict.

2. Poverty

Extreme social and economic deprivation are related to the development of substance use and delinquency (Hawkins, 1995). Poverty places children at risk for school dropout, serious delinquency and substance use. Over one half of students from poor families do not graduate from high school (O'Donnell, 1995). Poverty is associated with fewer coping skills and more potential for family violence, child abuse, and neglect (Van Hasselt, 1993). Living in neighborhoods with high population density and high rates of criminal behavior have also been identified as a predictor of criminal behavior and to a lesser degree substance abuse (Hawkins, 1995). Length of residence in a community is related to the degree of social bonding in individuals and this in turn is predictive of delinquency and related problems (O'Donnell, 1995).

African Americans are exposed to greater risk for substance abuse with regard to living situations compared to Caucasians. Over 35% of African American families live at or below the poverty level. Compared to Caucasians, a greater proportion of African Americans have no working head of the household (33% vs. 14%). While 62% of African American families are divorced, separated, widowed, or never married this is true of only 33% for Caucasian families. Additionally, more African American children are born to unwed mothers (58%) or adolescent mothers (28%) than in Caucasians (28% and 14% respectively; Van Hasselt, 1993). All of these factors are associated with increased risk for substance use.

Summary

Substance use in adolescents is a complex issue. In order to effectively treat substance use problems, multiple areas need to be addressed. Improved functioning in areas such as school performance, peer and family relationships, and psychopathology serve to decrease risk factors associated with development of protracted substance use while increasing protective factors that decrease the likelihood of continued problematic substance use. Based on the aforementioned research studies an effective substance abuse treatment program should result in improvements in several areas of functioning. Improvements in these areas of functioning will be measured by the effectiveness standards listed below.

C. Effectiveness Standards: Changes in Adolescent Behavior

1. Reductions in substance use will be assessed by:

- the frequency of substance use; the primary measure will be a reduction in the total number of days of substance use over the intervening period
- the intensity of substance use; the primary measure will be a reduction in the number of times a day a drug is used
- the number of substances an individual currently uses
- the proportion of positive urinalyses collected over the intervening period
- the number of re-convictions for alcohol or drug related offenses in the intervening period
- re-admission to a chemical dependency treatment program (detox, inpatient, or outpatient) over the intervening period
- the number of emergency room visits
- the number of inpatient medical hospitalizations

2. Reductions in recidivism will be assessed by:

- the number of subsequent convictions incurred over the intervening period
- a subsequent conviction is any court legal action including a conviction, deferred disposition or diversion agreement in a Washington State court for an offense committed following the initial action that made the youth eligible for the CDDA program
- felonies and misdemeanors, including gross misdemeanors, will be reported separately
- the number of violations of the terms of community supervision
- violations are usually not criminal actions
- probation officers vary greatly in their reporting of violations
- this is a difficult area to measure as violations typically increase as the level of supervision becomes more intense resulting in a potentially ambiguous and misleading measure of program effectiveness
- completion of any restitution to victims ordered by the court

- the amount of the restitution will vary
- measures will include whether a youth is failing, successfully completing, or has fully completed restitution

The number of arrests incurred over the follow-up periods will not be used as a measure of criminal recidivism in evaluation of the CDDA programs. Arrest data are difficult and costly to reliably obtain because there is no statewide database for arrests. Therefore, until there is a statewide database for arrests, arrests will not be used in determining effectiveness of chemical dependency treatment programs for CDDA youth.

3. Improvement in others areas of functioning such as:

- Improved school performance over the intervening period as evidenced by:
- an improvement in grades
- a decrease in truancy or dropout
- a decrease in the number of school disciplinary actions
- Improved family functioning over the intervening period as evidenced by:
- fewer conflicts with family members
- greater parental satisfaction with adolescent's behavior
- decreased runaway episodes
- Improved social functioning over the intervening period as evidenced by:
- less time spent with substance-using and/or delinquent peers
- increased friendships with prosocial peers
- decreased feelings of alienation
- fewer incidences of unprotected sexual activity
- Improved psychological functioning over the intervening period as evidenced by:
- fewer days of self-reported mood disorders
- fewer days of aggressive or hostile acts towards family, peers or others
- fewer days of antisocial behaviors
- reduced feelings of alienation
- greater ability to concentrate on tasks
- fewer admissions for psychiatric treatment, either inpatient or outpatient
- decreased use of psychiatric medications
- Improved vocational functioning (if applicable) over the intervening period as evidenced by:
- fewer absences from work
- fewer days of late attendance or leaving early
- fewer disciplinary actions
- more positive relationship with co-workers

III. SCREENING AND ASSESSMENT OF ALCOHOL AND OTHER DRUG USE

A multistage screening and assessment process is the most cost effective strategy for the comprehensive evaluation of adolescent substance use and associated problems (Babor, 1991; Dembo, 1994a, 1994c; Tarter, 1991). Since assessment of the multifaceted problems of adolescents can be labor intensive and costly, a decision tree format is recommended to efficiently guide a client

through the assessment process (Tarter, 1990). There appears to be consensus that a three step model is the most productive when treating juvenile delinquents and or substance abusing adolescents (Dembo, 1994a, 1994c; Babor, 1991; Tarter, 1991). The first stage of the evaluation process when dealing with potential substance abusing adolescents is to screen for the presence of specific problems. The second stage is to perform a more comprehensive evaluation of problem areas identified by the screening evaluation. In the third phase of the evaluation process individuals are referred to outside agencies for evaluations that can not be performed in the detention or treatment setting and a treatment plan is formulated based on the findings of all of the assessments.

The Treatment Improvement Protocol (TIP; McPhail, 1995) consensus panel on adolescent diversion programs recommends that in the evaluation process, the assessor be an appropriate professional trained in and experienced in working with adolescents. The Treatment Improvement Protocol consensus panel also recommends that the following be included in the evaluation process:

- history of alcohol and other drug use
- medical health history and physical examination
- developmental issues
- mental health history
- strengths or resiliency factors
- family history
- school history
- vocational history
- sexual history
- peer relationships
- juvenile justice system involvement and delinquency
- social service agency program involvement
- leisure activities

A. Screening

Screening should be instituted at the earliest point of contact with the adolescent and should address potential problems in multiple areas. The primary goal of screening is to identify youth with a suspected substance use problem and refer them for a more comprehensive evaluation of substance use and related problems. In published studies the most commonly used screening instruments are the Personal Experience Screening Questionnaire (PESQ; Winters, 1992), the Substance Abuse Subtle Screening Inventory-Adolescent version (SASSI-A; Miller, 1990), and the Problem Oriented Screening Instrument for Teenagers (POSIT; Rahdert, 1991). Instruments such as the SASSI-A screen only for problems with substance use. Other instruments such as the he POSIT, screen for problems in multiple areas of functioning . For treatment providers a lack of consistency in screening can mean that different regions of the state are referring youth with very different needs to the same kind of treatment. From a research perspective, a single instrument is virtually essential in order to provide meaningful comparisons of youth from different areas of the state.

In the state of Washington no single screening instrument is consistently used when determining if an adolescent may require chemical dependency treatment. Through a coordinated court administrative effort in Washington State a new risk assessment tool is currently under development. This new risk assessment instrument will be administered by juvenile court intake and probation staff after the adolescent is adjudicated, but before disposition (sentencing). An adolescent’s level of risk will be

determined based on interviews with the adolescent and his family and will influence the level of supervision and the conditions of sentence, including the type of treatment that an adolescent is given. Verification of this information will be obtained through reports by other involved agencies. This risk assessment tool appears to cover the areas within the CDDA statute, and those recommended by the Treatment Improvement Protocol consensus panel. The risk assessment tool could effectively be used as a screening instrument to refer potentially eligible youth to the CDDA program for more thorough evaluation of chemical dependency and related problems.

B. Comprehensive Assessment Battery

If an adolescent is referred to CDDA, a primary goal of the CDDA comprehensive assessment battery should be to determine whether an individual is dependent on, abusing, or merely using drugs and alcohol. Additionally, the CDDA evaluation should provide a more detailed description of the adolescent's problems in school, family, peer, medical, legal, and psychiatric domains of functioning, as well as use of leisure time. Results from this comprehensive evaluation can be used to formulate the most appropriate and least restrictive individualized treatment plan. This comprehensive evaluation can also determine if additional referrals and/or treatments are required for problems in areas not addressed by the substance abuse program (e.g., an adolescent who appears at risk for suicide may be referred for a full psychiatric evaluation).

The utility of the assessment instrument as a component of measuring outcomes is also important. For instance, the quantity and the frequency of alcohol use needs to be measured at treatment intake and re-evaluated at each follow-up to determine whether there has been a decrease in alcohol use. All of the areas listed in the effectiveness standards will need to be assessed when an adolescent enters treatment and re-evaluated at each follow-up in order to measure change over time. As mentioned previously, many issues in addition to drug and alcohol use have a tremendous impact in the youth's life and will need to be addressed in treatment; therefore, these issues will have to be identified during the assessment process.

1. Substance use disorder diagnoses

Although there is agreement that use of a sequential assessment battery is the most appropriate and least costly alternative for formulation of a comprehensive treatment plan, there is no consensus as to which instruments should be used to determine substance use disorder diagnoses. For research purposes it is essential that a uniform instrument be used to establish formal substance use diagnoses. A formal diagnosis of substance dependence requires a maladaptive pattern of substance use that results in clinically significant impairments in functioning and or emotional distress regarding substance use. It should be noted, that although individuals who meet criteria for a substance dependence diagnosis typically have greater severity of substance use than those without a dependence diagnosis, individuals with 'severe' substance use may not always meet criteria for a dependence diagnosis. The substance use of an individual may be frequent and intense, but may not result in impairments in their functioning or psychological distress. Therefore, severity of use should not necessarily be considered synonymous with a formal substance use diagnosis of dependence.

Formal substance use diagnoses can be determined by self-report, as in the case of the Client Substance Index (CSI; Moore, 1990), by unstructured clinical interviews, computer based structured interviews, or semi-structured interviews (Anfold, 1989). The Adolescent Diagnostic Interview (ADI; Winters, 1993) is a commonly used structured pencil and paper diagnostic interview. There are also several commonly used computer based structured interviews such as the Diagnostic Interview

for Children and Adolescents (DICA; Wellner, 1987), and the Diagnostic Interview Schedule for Children (DISC; Costello, 1985). Semi- structured interviews such as the Composite International Diagnostic Interview-Substance Abuse Module (CIDI-SAM; World Health Organization, 1993), the Structured Interview for DSM-IV Axis I Disorders (SCID-IV, First, 1996), and a youth's version of the Schedule for Affective Disorders and Schizophrenia, often referred to as the 'kiddie SADS' (K-SADS; Puig-Antich, 1987), have also been used to determine formal substance use diagnoses.

There are advantages and disadvantages to each method of assessment. The self-report method is the least costly in terms of staff time, requires no clinical skill on the part of the test administrator, and in fact, does not necessarily require that a test administrator be present. The disadvantages of a self-report method are that the adolescent may not be truthful in his responses in order to manipulate referral decisions. Additionally, the adolescent may not understand the nature of the question due to inattention or reading problems and may not always ask for clarification (Meyers, 1995; Winters, 1992). It is therefore, not recommended that a self-report measure such as the CSI be utilized to make formal substance use diagnoses.

Use of structured interviews can be more costly in terms of time and manpower, since an interviewer must be utilized. A strong degree of clinical skill is not required for interviewers, however, since probing of the youth's responses is generally not necessary in structured interviews. If probing is done, the probes are typically provided and it is advised that the interviewer ask the questions exactly as they are written. Not allowing for probing, however, can be problematic. As with self-report instruments, youth may not fully understand the nature or intent of the question, but the interviewer is directed to consider only the response as given. An unskilled interviewer, for example, may not be able to determine if the youth is minimizing the severity of their substance use. Highly structured interviews also do not encourage rapport building and can result in higher levels of defensiveness. This can be especially true when using a computer based interview (Rahdert, 1995). Consequently, it is not recommended that a structured interview such as the DICA, DISC, or ADI be used for the CDDA project.

Use of a semi-structured interview is recommended. Although these interviews require the greatest amount of clinical skill to administer and score, they provide perhaps the most comprehensive evaluation of substance use problems. These interviews are based on Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria sets and usually include standard initial questions for each criterion, but encourage the use of probing to ensure that the information is correct and that the intent of the question was understood. The interviewer can confront the youth if it appears that they are being untruthful. This type of interview allows for greater rapport building between the interviewer and youth which may result in more valid information (Meyers, 1995).

The K-SADS provides Research Diagnostic Criteria substance use diagnoses which are similar to, but not interchangeable with DSM-IV diagnoses. DSM-IV diagnoses can, however, be established by slightly modifying the interview questions. Advantages of the K-SADS are that it allows for the collection of data from parents and for the incorporation of archival data in determining diagnoses. The CIDI-SAM and SCID provide DSM-IV diagnoses, but have been used primarily with adults and older adolescents. These instruments do not allow use of parental and other sources of information to the same degree as the K-SADS. The K-SADS, SCID, and CIDI-SAM all take approximately 20-30 minutes for a trained technician to administer and provide lifetime and current (last month) diagnoses of substance dependence and abuse. The optimum instrument to use for the CDDA

assessment of substance use disorders would, therefore, be the K-SADS.

All of these instruments provide only information concerning the degree of impairment in functioning and presence or absence of withdrawal symptoms required for a formal diagnosis of substance abuse or dependency. These instruments do not provide detailed information regarding the amount or frequency of use or assess functioning in other areas such as school performance, family relationships, or peer relationships. Information regarding intensity and frequency of substance use and functioning in other areas must be obtained from an additional comprehensive assessment instrument.

2. Assessment instruments for substance use and other problem areas

Several comprehensive assessment instruments have the potential to meet the needs of the CDDA project. Common components of these comprehensive assessment instruments include a thorough evaluation of current use and history of substance use and assessment of other problem areas, but do not provide formal diagnoses of substance abuse or dependence. The main differences between these comprehensive instruments are the types of problem areas addressed and the format of the instrument. There are three comprehensive interviews cited most often in research on adolescent with substance use problems and delinquents that should be considered for use. They are the Adolescent Drug Abuse Diagnosis Instrument (ADAD; Friedman, 1989), the Personal Experience Inventory (PEI; Winters, 1993), and the Comprehensive Adolescent Severity Inventory (CASI; Meyers, 1995). Each of these is described below.

a. Personal Experience Inventory (PEI, Winters, 1987)

The Personal Experience Inventory (PEI) is a 276 item self administered pencil and paper, or computer based, questionnaire which takes approximately 60 minutes to complete (Winters, 1993). The PEI has two major sections, the first is the Chemical Involvement Problem Severity (CIPS) section, which measures substance use severity, frequency, and onset. The PEI, however, does not measure the quantity of substance use. The second section, Psychosocial Risk Factors, measures both interpersonal and environmental risk factors as well as some specific clinical problems such as mental health problems, parental drug use, and eating disorders. The PEI also includes validity scales to control for attempts to fake ‘good’ or ‘bad’ responses.

[Note: correlations (r’s) of at least 0.75 are considered necessary for acceptable reliability, validity coefficients are typically lower, but should at least be above 0.50]

Norms for the PEI are based on interviews with over 6,000 youth, over half of whom were in chemical dependency treatment. The youth in this normative sample were 60% male, 75% Caucasian, and their average age was 15 years old. The current psychometric evidence for the PEI is encouraging. Test-retest reliability correlations are reported to range from 0.84 to 0.91 for the CIPS and between 0.64 to 0.96 for the psychosocial scales. The PEI has demonstrated adequate content, criterion and construct validity (Guthmann, 1990). The internal consistency (coefficients alpha) of the scales ranges from 0.70 to 0.97 for the chemical involvement scales, between 0.66 to 0.91 for the psychosocial section and between 0.49 to 0.82 for the response distortion scales. These results indicate that the PEI has adequate internal consistency for some, but not all, scales. The PEI has been found to have minimal ethnic bias (Guthmann, 1990).

b. Adolescent Drug Abuse Diagnosis Instrument (ADAD; Friedman, 1989)

The Adolescent Drug Abuse Diagnosis Instrument (ADAD) is a structured interview of 150 items which takes approximately 60 minutes to complete and 10 minutes to score. The ADAD assesses seven problem areas: alcohol and other drug use, health status, education, social interactions, family interactions, psychiatric problems, and legal status. The ADAD also includes items to assess response bias. Each life problem area is scored for problem severity on a 10-point scale. Mathematically derived composite scores can also be determined for each of the seven assessed areas. These composite scores can also be used to assess changes over time in problem severity for each of the seven areas. A shorter 83 item version of the ADAD has been created for use as an outcome tool.

The ADAD was standardized using adolescents (average age 15.6) with substance use problems. The sample included 683 outpatients, 157 nonhospital residential, and 202 hospital based residential patients. The majority of the sample was male (73%) and Caucasian (53%). The interrater reliability of the ADAD is adequate (r = 0.85 to 0.97) as is the test-retest reliability (r's between 0.83 and 0.96) except for the employment section (r = 0.71). Validity for the ADAD is adequate for the majority of the sections (r's between 0.43 and 0.67), but not for the health and social sections (r's below 0.51 and 0.52 respectively in most studies).

c. Comprehensive Adolescent Severity Inventory (CASI; Meyers, 1995)

The Comprehensive Adolescent Severity Inventory (CASI) is the newest of the instruments considered in this report. It is a semi-structured interview that examines functioning in ten life areas: health, stressful life events, education, drug and alcohol use, family relationships, peer relationships, legal issues, mental health, and use of free time (Meyers, 1995). Items that assess response bias are also included. The CASI takes a trained technician approximately 45-90 minutes to administer. Administration time depends on the severity of problems and whether all modules are included. There is a three tiered approach to scoring the CASI. The first level of CASI scoring provides indicators of the assets and liabilities of the adolescent. In the second level of scoring, problem status along a temporal continuum within each life area are provided. The third level of CASI scoring provides overall scores for each of the ten areas of functioning for the last year and the last month. CASI users can use all or any combination of these scoring procedures. The CASI also has questions which lend themselves to potential outcome measures. If the computer version of the CASI is used a summary report of the adolescent's functioning may be obtained which can be utilized in treatment planing**.**

There is no published data on the psychometric properties of the current version of the CASI. Reliability and validity data for the CASI is currently being collected in a three year National Institute of Drug Abuse funded evaluation. The CASI is a revised version of the Comprehensive Addiction Severity Index for Adolescents (CASI-A; Meyers, 1995). Revisions to the CASI-A were made to improve the overall reliability and validity of the instrument as well as to improve wording of some items (Meyers, 1995). The original standardization sample was 103 adolescents receiving treatment for substance use problems and/or psychiatric problems. The sample had an average age of 16, was mostly Caucasian (89%), and mostly male (55%). Internal consistency of the original CASI-A scales ranged from 0.48 for Family History to 0.80 for Drug and Alcohol Use Consequences. Preliminary evidence of reliability was promising. Once again it should be noted that evaluation of psychometric properties for the CASI is ongoing.

Summary
All of these potential instruments have been used in research with adolescents and have had their reliability and validity assessed to varying degrees. Each of these instruments have ways of accounting for the possibility that the data obtained by these instruments can be biased by how truthfully the youth responds. This is one of the most important factors to consider because youth will be aware that the results of the assessments will help determine whether they are referred to a CDDA program or are sent to detention. No research exists that definitively states that one instrument is superior to the others; research indicates that the aforementioned instruments all appear adequate and would serve the necessary purposes for treatment planning and treatment outcome evaluation.

As discussed previously in the section on diagnostic instruments it is preferable to use a semi-structured interview for data collection compared to a self-report or structured interview whenever possible. Of all these instruments the CASI provides the most detailed information and would allow evaluation of all the elements described in the effectiveness standards with regard to changes in adolescent behavior, except the recidivism measures. Information regarding recidivism, such as subsequent convictions, violations of terms of community supervision, and completion of restitution to victims will be obtained primarily from criminal histories obtained through the JUVIS and OBTS databases. Despite the lack of psychometric information available for the CASI it is recommended for use with CDDA youth because of its comprehensive nature and its semi-structured format.

3. Other areas of assessment
If more specific information on CDDA youth is required it will be necessary to include additional instruments and/or interviews. The project may want to assess motivation for treatment, in which case the Decisional Balance Inventory (Migneault, 1997) could be used. More information on mental health problems can be assessed with inventories such as the Brief Symptom Index (BSI; Derogatis, 1982). Specific instruments are available to assess problems in areas including physical health, school problems, social/peer relationships, family relationships/problems, delinquency/illegal behavior, and psychological/psychiatric problems. As with all areas of adolescent assessment, however, the reliability and validity of these instruments, for the most part, varies greatly.

Treatment fidelity can be assessed with the Treatment Services Review (TSR; McLellan, 1992). This instrument, which takes 5-10 minutes to administer, queries individuals in treatment about the number of significant contacts that they have had with counselors, physicians, nurses, and other treatment staff. The TSR can also be used to review services documented in clinical charts. It is recommended that, at least initially in the CDDA project, TSRs be administered to a random sample of adolescents during treatment. Clinical charts can then be reviewed to ensure that services being documented in clinical charts are actually being delivered to adolescents.

IV: EVALUATION OF CDDA TREATMENT PROGRAMS

The CDDA legislation provides an opportunity for the Juvenile Rehabilitation Administration (JRA), in conjunction with the Division of Alcohol and Substance Abuse (DASA) and local juvenile courts, to strengthen existing chemical dependency programs for youth involved with the juvenile justice system. This will be accomplished by incorporating into existing programs additional elements of treatment that research has demonstrated to be effective in reducing substance use, and through the

enhancement of linkages with community based services in order to provide a comprehensive continuum of care. Effectiveness of these treatment programs can be assessed using changes in variables which research has demonstrated to be critical in the development and maintenance of adolescent substance use problems (e.g. school performance and emotional distress). The CDDA program also provides an opportunity to evaluate the process, and any difficulties that may arise in implementation of the CDDA legislation. Furthermore, the CDDA program provides the opportunity to evaluate the short term (6 month) and long term (18 month) effectiveness of these new programs in reducing substance use and recidivism in juvenile justice involved youth.

A. Process Evaluation

Prior to performing an outcome evaluation of chemical dependency treatment programs for CDDA youth, a process evaluation will be performed. Interviews with individuals from JRA, local courts, and the DASA provider network involved with the CDDA program will be conducted by University of Washington researchers to document implementation of CDDA legislation. This evaluation will be completed by July 1998.

B. CDDA Outcome Evaluation

To determine whether the CDDA programs are successful in decreasing substance use and recidivism, evaluations of the frequency and intensity of substance use and criminal activity of CDDA adolescents should be compared to those of appropriate comparison groups at several time-points:

- at baseline, the date of the court-ordered CDDA disposition
- upon discharge from the initial treatment placement (e.g., detention based treatment, inpatient treatment); this evaluation will provide data on the decrease in substance use achieved during the initial treatment and act as a baseline measure of substance use and general functioning for the continuing care component of CDDA treatment
- at 6,12, and 18 months following the date of the court-ordered CDDA disposition

Comparison groups will consist of those youth eligible for the CDDA program who do not participate in CDDA, and youth in the various treatment programs who have had involvement with the juvenile justice system but are currently without CDDA sanctions and supports. Youth from the CDDA program and comparison groups will be followed for the entire 18 month period, whether they complete treatment or not.

The specific outcome measures which will be employed in the evaluation of CDDA programs are the variables outlined in this report which have been demonstrated to be important to the successful rehabilitation of chemically dependent youth. Data regarding substance use and criminal activity should be corroborated at each evaluation through the use of urine drugs screens, criminal histories, and, when possible, by interviews with parents, probation officers and others involved in the treatment of the adolescent.

The outcome evaluation will address the extent to which CDDA sanctioned and supervised chemical dependency treatment results in:

- reduced criminal convictions
- reduced number of violations of the terms of community supervision
- increases in completion of any restitution to victims ordered by the court
- reduced substance use
- produces improvements in other areas of functioning (e.g., in school and family)

The number of arrests incurred over the follow-up periods will not be used as a measure of criminal recidivism in evaluation of the CDDA programs. Arrest data are difficult and costly to reliably obtain because there is no statewide database for arrests. Therefore, until there is a statewide database for arrests, arrests will not be used in determining effectiveness of chemical dependency treatment programs for CDDA youth.

The outcome evaluation of the CDDA legislation will also provide an opportunity to determine what characteristics of JRA clients are associated with successful outcomes in specific types of chemical dependency treatment programs. The evaluation will also document the nature and sequence of continuing care for youthful offenders and how continuing care is related to chemical dependency treatment outcomes.
The first data regarding outcomes will be available in 1999.

C. Corroboration of Substance Use and Recidivism
One of the primary outcome measures for the CDDA program will be changes in substance abuse and recidivism. Much of the information regarding substance use and illegal activity will be collected directly from adolescent self-reports. There have been no rigorous studies, to date, regarding the veracity of adolescent self-reports. Some data suggest than adolescents are truthful, yet other studies find conflicting evidence between information provided by self-report and information provided by corroborating sources (Winters, 1995; Meyers, 1995). Therefore, in the CDDA project it is strongly recommended that information regarding an adolescent's substance use and criminal activity be gathered from additional sources such as reports from parents, probation officers and others involved with the adolescent's treatment as well as results from random urine drug screens and criminal histories. While urine tests are good for detecting the presence of drugs, they do not provide any information concerning frequency or duration of drug use. With the exception of marijuana, which can be detected for almost a month, urine drug screens can only detect drugs which have been used in the last 3-4 days.

D. Data Sources
The collection and analysis of the data for the outcome evaluation of the CDDA program will be complex. Multiple sources of data will be used. The sources of data may include at the minimum:

- For Recidivism:
- JUVIS, which is managed by the Office of the Administrator for the Courts, including information on the youth's criminal adjudications and diversions within Washington State
- OBTS, the Department of Corrections' database provides information on adult felony convictions within Washington State
- For Demographics, Substance Use, and Other Problem Areas:
- TARGET, DASA's management information system which includes information such as referral sources, living situation, employment/income, mental health, arrests/illegal activity, measures of substance use, and substance use diagnosis
- Court administered Risk Assessment Instrument, which may serve as the screening instrument for CDDA if uniformly implemented by local courts
- Comprehensive Assessment
- Main assessment tool of alcohol and drug use and other problem areas (e.g. CASI, PEI, or ADAD)
- DSM-IV based instrument for clinical diagnosis of chemical dependence (e.g. K-SADS)

E. Data Collection Techniques

A Time-Line Follow-Back (TLFB) technique will be utilized at baseline and at each follow-up to obtain a continuous record of alcohol, marijuana, and other drug use (e.g., percent of days alcohol used, percent of days of heavy drinking), and time spent in controlled environments such as treatment settings and prison. Recall varies from person to person and decreases with time, therefore, we will obtain 'best estimates' of substance use over the six month follow-up periods. The TLFB is one of the most widely used outcome measures in alcohol and drug studies (Babor, 1994). The TLFB will be administered at baseline, and at the 6, 12, and 18 month follow-ups.

The primary substance abuse outcome measures will be days of use in the preceding month and the percent of days of drug use from the TLFB for the previous six months. We will also evaluate changes in the intensity of drug use (amount of a substance used during each period of use). These measures will reflect drug use during periods in which adolescents are not in controlled environments, such as incarceration, where access to drugs is limited. Validity of self-reports of drug use will be evaluated through comparisons with urine toxicology results taken by the probation department during the study period and parental reports of the adolescent's substance use.

Improvement in other important areas of functioning will be assessed using the same comprehensive instrument administered at baseline. Objective and subjective data from the adolescent and parent(s) will be used to determine if improvements have occurred in the areas of family, school, and peer relationships as well as mental health.

F. Statistical Issues

In order to provide a statistically sound and meaningful evaluation of program efficacy it is strongly recommended that the CDDA program contract with a few treatment programs that serve a relatively large number of adolescents rather than having numerous programs serving relatively few individuals. This procedure will provide large enough sample sizes that any statistically significant differences in efficacy that may exist between the continuum of care provided for CDDA youth and standard chemical dependency treatment provided for the comparison groups will be revealed in data analyses. By utilizing fewer treatment programs as well as appropriate comparison groups, one can be more confident in concluding that any outcome differences are truly an effect of the program intervention and not some other factor.

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