ABSTRACT FORM FOR POSTER & PAPER SESSIONS

Must be received by September 27, 2004

ASAM
AMERICAN SOCIETY OF ADDICTION MEDICINE

36TH ANNUAL MEDICAL-SCIENTIFIC CONFERENCE
APRIL 14-17, 2005
HYATT REGENCY DALLAS
DALLAS, TEXAS

Principal Author: Michael Q. Patton, PhD

Mailing Address: AARC

303 Forge Road, SE

Calgary, Alberta, CANADA T2H 0S9

Tel: 403 253 5250

Fax: 403 640 2520

E-mail: mqpatton@prodigy.net

As Principal Author, I am within 5 years of receipt of a doctoral degree or completion of a medical residency:

☐ YES ☒ NO

If yes,doctoral degree received: _____

Year: _____

or residency: _____

Year completed: _____

I affirm this paper to be new, original work, not previously published. If accepted for presentation, I (or another of the authors) will be available to present it.

(Title, authors and abstract must fit into 4.5" x 6" box)

ALBERTA ADOLESCENT RECOVERY CENTRE - AN OUTCOME EVALUATION

Michael Q Patton, PhD, Union Institute and University, Cincinnati, Ohio, FD Vause, P Choate, N Lirenman, G Goresky

Aims: This is an outcome evaluation of the rehabilitation program at the Alberta Adolescent Recovery Centre.

Design: 100 consecutive graduates were selected for interview. 85 graduates were interviewed, representing a time frame of 7 months to 5.5 years post graduation. For the 15 graduates who were not interviewed, 11 of 15 parents participated in a similar interview about their child. Questions evaluated substance use, recovery, and emotional sobriety.

Findings: 95.3% of graduates interviewed were abstinent at the time of interview with 4.8% reporting substance use once a month or weekly. Of the 37.6% of interviewed graduates who were previously diagnosed with Attention Deficit Disorder and the 32.9% diagnosed with mental illness prior to AARC, none were prescribed medication following treatment. There was a significant improvement in all measures of recovery, including education, employment, and family relationships. For the 15 graduates not interviewed, sobriety at the time of interview was confirmed by parents in 2 graduates. These reports indicate physical sobriety validated by interview in 83 % of the 100 graduates at the time of interview; 48 % of graduates remained continuously sober since completion of treatment,

Conclusions: For adolescent substance abuse disorder, the AARC treatment model, as currently implemented, demonstrates a high measure of sustained recovery in its graduate population. Sobriety of graduates is associated with improvement in all measures of recovery. Need for prescription medications by clients previously medicated was virtually eliminated. This evaluation design permits neither generalization of the results beyond AARC's own implementation; nor disaggregation of the multiple interventions of treatment to test alternative hypotheses.

SEE ABSTRACT INSTRUCTIONS, SAMPLE AND CHECKLIST

Signature of Principal Author: _____

Outcome evaluation of a 12 step long term recovery program for adolescent addiction

Authors:

Michael Patton, Gerald V. Goresky, F Dean Vause,
Peter Choate, and Natalie Lirenman

This work was carried out at:

Alberta Adolescent Recovery Centre
303 Forge Road, SE
Calgary, Alberta
CANADA T2H 0S9

Reviewing Author:

Gerald V. Goresky, MD
C/o Dean Vause, PhD
Alberta Adolescent Recovery Centre
303 Forge Road, SE
Calgary, Alberta
CANADA T2H 0S9
g.goresky@ucalgary.ca

Michael Patton is an independent consultant. Gerald V. Goresky is the Chair of the Clinical Committee at the Alberta Adolescent Recovery Centre. F. Dean Vause is the Executive Director and Natalie Lirenman is a member of the Clinical Staff at AARC. Peter Choate, a private consultant, evaluates AARC clients to assess level of dependence and to confirm diagnosis.

Abstract

- This is an outcome evaluation of the rehabilitation program at the Alberta Adolescent Recovery Centre. Using a retrospective self-report survey, 100 consecutive graduates, 8 months to 5.5 years post graduation were selected. In addition, 30 parents of interviewees and parents of graduates unavailable for interview were surveyed. Questions evaluated substance use and recovery, social functioning, and emotional sobriety. Significant improvement in education, employment, family relationships, social relationships, and mental health functioning was found from pre to post treatment. For those diagnosed prior to AARC with Attention Deficit Disorder (37.2%) and mental illness(32.9%), none were prescribed medication at the time of the interview. Since graduation 48% of the sample reported continuous sobriety. Sobriety was confirmed in 85%, using both self report (83) and corroborative evidence from parents(2). Graduates of AARC report improvement in all measures of recovery, including confirmed sobriety and elimination of prescription medications for ADD/ADHD and mental illness.

Key Words
Addiction, adolescent
Substance abuse treatment
Evaluation, self report

1. INTRODUCTION

Evaluation of treatment outcomes of adolescent drug addiction is important for validation of success of the treatment model used and for comparing the success of different treatment interventions. The Alberta Adolescent Recovery Centre (AARC) has provided a long term treatment program for the last 12 years, and, at the time of initiating this research, had graduated approximately 218 clients. This evaluation was undertaken to assess a broad range of measures of success of this recovery program.

Definitions of addiction applied for the purpose of this evaluation are Substance Dependence Disorder and Substance Abuse Disorder as defined by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorders, Version IV (DSM-IV) (Association, 1994). The outcome measures selected are guided primarily by the Drug Abuse Treatment Outcome Studies (DATOS), which showed the value of evaluating substantial lifestyle changes over time.(Etheridge, Hubbard, Anderson, Craddock, & Flynn, 1997; Fletcher, Tims, & Brown, 1997)

The following criteria have been used to evaluate success -- family relationship changes (Booth & Kwiatkowski, 1999; Needle, 1988), involvement in education (Hser, 2001), employment (Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997); changes in involvement with the criminal justice system (De Leon, 1993; Farabee, 2001; Hubbard et al., 1997) and the development of pro-social behaviors(De Leon, 1993; Gordon & Zrull, 1991). Involvement in post treatment activities such as 12 step programs (Latimer, Winters, Stinchfield, & Traver; Thurstin, 1987) are indicators of commitment to sustaining sobriety.It has been acknowledged that many factors are often at play simultaneously (Bergmann, Smith, & Hoffmann, 1995; Harrison & Asche, 2001; Holcomb, Parker,& Leong, 1997; Hsieh, Hoffmann, & Hollister, 1998; Rounds-Bryant, 1998).

The presence of co-morbidities(D. D. Simpson, Joe, G.W., Fletcher, B.W. Hubbard, R.L. and Anglin, M.D., 1999), and multiple psychosocial problems(Hser, 2001; Hsieh et al., 1998) may impact the success of treatment. In previous evaluations it was shown that two-thirds of adolescent clients at admission may have a co morbid disorder(C. E. Grella, Hser,Y., Joshui,F. and Rounds-Bryant,J., 2001; Wise, 2001). Changes in these factors merit assessment.

This evaluation was initiated to assess abstinence from substance abuse, lifestyle changes, changes in emotional functioning, and participation in continued recovery programs following graduation from long-term, family-centered treatment at the Alberta Adolescent Recovery Centre, for graduates from 1998 to 2003.

2. METHODS

This study was reviewed and approved by the Institutional Ethical Review Committee at the Alberta Adolescent Recovery Centre. Subjects and parents either gave informed consent, if over the age of majority, or consent was given by a legal guardian for those who had not achieved the age of majority. Consents were obtained by phone and witnessed by another party confirming the verbal granting of consent. Minors were acknowledged to have the right to refuse to participate, even if their parents offered consent.

A naturalistic retrospective approach was used. The process of participant selection is outlined in Figure 1.

From 281 graduates, a sample, consisting of 100 sequential graduates from 1998 to 2003 was selected for interview.

2.1 Interview Process and validation of information

An interview schedule was developed specifically for this research. Prior to use, it was tested, modified and retested on graduates who were not part of the research sample. IN questioning graduates and parents, subjects were asked to evaluate consequences of use; the impact upon and involvement in support systems, including 12 step programs, the presence of a dual diagnosis, subsequent use patterns and rates; frequency of use; peer influences; forensic and legal complications; and some success factors other than sobriety and family conflict(Bauman & Ennett, 1996; Doyle, Delaney, & Tobin, 1994; Emerick, 1979; Hanstein, 2000; Miller & Sanchez-Craig, 1996; Moggi, Ouimette, Moos, & Finney, 1999; Moos, Finney, & Moos, 2000; Needle, 1988; D. D. Simpson, ; Spicer, 1991; Stout, Brown, Longabaugh, & Noel, 1996; Wilens, 1995). Four time frames were considered – pre-treatment; during treatment; following treatment and at the time of the interview.

Following the completion of the client graduate interviews, 30 parents were randomly selected for interview, using a second questionnaire. This was designed to elicit corroborative information about substance use, social functioning, and emotional sobriety. In addition, 11 of 15 parents of those client graduates not interviewed were available for and underwent interview to collect data about the remaining 15 client graduates. Proxy information on the graduate population who were not accessible was collected from parent interviews only, where available.

In order to validate co morbidity, clinical records were provided. These included assessment records and treatment records. All of the graduates had been interviewed at the time of admission, and the presence or absence of co morbidities had been identified. The criteria of DSM IV(Association, 1994) were used to classify the presence of a substance abuse or substance dependence disorder or other mental health diagnosis. All 100 graduates from the sample completed the Substance Abuse Subtle Screening Inventory – Adolescent version at the time of admission.

Once consent was obtained, all questionnaires were numbered and stored in a confidential manner by one of the researchers. Collation and collection of information was maintained by number of each questionnaire only, to preserve the confidentiality of the information and the anonymity of subjects.

Interviews were conducted by telephone by two of the researchers, following the interview schedule set out in the questionnaire. The interviewer recorded subject answers, including verbatim recording of comments where the subject was invited to offer observations. All client interviews were conducted over a three month period, from April to July of 2003.

2.2 Statistical Analysis

Data was transferred to the Statistical Program for the Social Sciences (SPSS) and analyzed. Statistical methods are provided where a statistical test was conducted. The sections in which statistical procedures were used and identified for the edification of the presented material are: legal—Cochran's Q; family—t-tests; peer relationships—Cochran's Q; recreation—Cochran's Q; and self-esteem—Cochran's Q.

In order to assess whether parent and adolescent information was concordant in regard to length of sobriety Kappa was used to assess dichotomous variables. Kappa was computed based on a three-by-three cross tabulation.

3. RESULTS

85 of 100 client graduates were available for and consented to the interview. These 85 client graduates interviewed represented 39% of the total graduate population (218 graduates) at the

time that the research was undertaken. When proxy information from parents was combined with client information, the completed interview process provided information regarding sobriety of 96 of the sample of 100 graduates.

Table 1 demonstrates substance use frequency by time since graduation, and Table 2 shows the longest period of continuous sobriety maintained by interviewed clients since graduation. On average, 2 years and 3 months had elapsed from the time of graduation to the time of interview. Mean age was 17.48 (*SD* = 1.75) years at the time of graduation from the program, and participants averaged 19.93 years of age (*SD* = 2.10), at the time of interview. Of the 85 graduates interviewed, 54.1% were male.

For the time interval over which this sample was taken (5.5 years), fifteen clients started, but did not complete the program. Reasons for non completion included voluntary withdrawal (6), termination for parental noncompliance (4), termination for client noncompliance (2), or referral to another institution (3).

3.1 Co morbidity

On admission to treatment, all 85 interviewed clients met the criteria for a Substance Dependence Disorder, according to SASSI, Adolescent version Of those matching this level, 85.8% of the 85 interviewed qualified for two or more drugs. The primary drugs were marijuana (95.2%) and alcohol (78.8%), with several other drugs also identified. For the purposes of this classification, we accept that dependence does occur with marijuana.(Association, 1994; Earleywine, 2002)

For 91.7% of interviewed clients, Substance Abuse Disorder was a co morbid diagnosis, 76.9% for more than one drug. Within this classification, drugs identified were psilocybin mushrooms (67%), LSD (41.1%), cocaine (35.2%) and Ecstasy (24.7%). Our expectation is that we would see changes in drug selection with time. Changes in social trends for drug preferences will vary with time, in accordance with drug availability, and cost.

A second, non substance-related diagnosis was found in 85.9% of the interviewed subjects as defined by DSM IV(Association, 1994). The most common co-existing disorders were Conduct Disorder (28.2%), Oppositional Defiant Disorder (24.7%), Attention Deficit Hyperactivity Disorder (27%) or a mood disorder (25.8%).

Psychosocial problems included academic difficulties (78.8%), family discord (76.4%), and involvement with the child welfare system (23.5%). Academic difficulties included lack of attendance at school, behavioral difficulties at school, lack of academic success (failing grades), and poor or intermittent attendance. Involvement in criminal behavior prior to admission to AARC was reported by 63.5% of the subjects. It should be noted that this is distinct from involvement in the criminal justice system, but rather represents self reported involvement in behavior that, if caught, would represent the basis for criminal charges. This would be classified as psychosocial and environmental problems which DSM IV(Booth & Kwiatkowski, 1999) usually considers on Axis IV.

Learning disorders were included with a primary diagnosis on Axis 1.

On the Global Assessment of Functioning, at the time of admission, all clients were found to be at or below a level of 55.

3.2 Gender

Patterns of drug use and social behaviors differ between males and females who enter and complete the AARC program. Use of substances multiple times per day “prior to attending AARC was reported by 56.4% of females as compared to 93.5 % of males ($p < .001$). Prior to

attending AARC, 56.4% of females reported no employment compared 23.9% of males ($p<$ .05). Involvement with the Criminal Justice System prior to AARC was less frequent for females (38.5%) compared with males (71.7%) ($p<$ .01). A greater proportion of females (87.2%) than males (63.0%) reported "very negative" self-esteem in the time period prior to attending AARC ($p<$ .05). Only 20.5% of females compared with 52.2% of males were diagnosed with ADD/ADHD prior to attending AARC ($p < .05$). Almost half (46.2%) of females reported being diagnosed with a mental illness prior to attending AARC compared to 21.7 % of males ($p<$ .05). Since graduation, this difference persisted, as 10.3% of females reported being diagnosed with a mental illness since attending AARC compared with 0% of males ($p<$ .05). For the graduates surveyed, we observed a difference between males and females in regard to frequency of use, involvement with the Criminal Justice System, self esteem, incidence of ADD/ADHD, and frequency of diagnosis of mental illness.

3.3 Substance Use and Recovery

The proportion of participants who reported using substances multiple times per day dropped from 76.5% in the time period prior to AARC entry to 9.41% since the time of graduation (*Cochran's Q* = 53.26, $p<$ .001).

At the time of the interview, 83 of 85 (97.6%) of interviewed clients were abstinent from alcohol and/or drugs. This represents 83 % of the selected population of 100 graduates. Of those interviewed, 2.4% were using drugs or alcohol either once a month or weekly. No other current use patterns were reported at the time of the interview. Table 1 provides a breakdown of use frequency since attendance at AARC by time since graduation. Higher relapse rates are found for those who have been graduated for longer periods of time. Longer periods of sobriety are possible, given longer periods of time out of treatment.

3.2 Personal & Social Functioning

Participation in school and academic performance improved since the time of AARC graduation. Of those currently enrolled in school, 82% reported their attendance was "much improved." Similarly, much improved school attitudes (87%), school behavior (84%) and school performance (82%) were reported.

Changes in completion of academic goals increased following graduation. High school completion increased from 5.9% prior to AARC to 23.53% since graduation, (*Cochran's Q* = 9.00, $p < .01$). College/university completion increased from 1.2% prior to attending AARC to 9.41% since AARC graduation, (*Cochran's Q* = 7.00, $p<$ .01).

Involvement with, and attendance at work was significantly improved following AARC graduation. Prior to AARC, 10.6% of interviewed graduates worked full-time. This increased to 40.0% during AARC program participation, (*Cochran's Q* = 20.16, $p<$ .001). There was a significant change in the percentage of respondents that reported being employed at some time prior to AARC (61.2%) and since graduation (100%), (*Cochran's Q* = 33.00, $p<$ .001). At the time of the interview, 57.6% were working full-time, 17.6% part-time, 2.4% intermittently part-time, and 22.4% were unemployed. The majority of working participants rated their work behavior (89%), work performance (86%), and work attendance (82%) as "much improved".

Family relationships improved. Graduates were asked to describe their relationships with their family on a 5-point Likert scale ranging from 1 ("Very positive") to 5 ("Very Negative"). Relationships with family were rated more positively for the period since AARC graduation (M = 2.02, SD = .83) compared to the period prior to AARC participation (M = 4.54, SD = .61), *(t* (84) = 23.32, $p < .001$). Figure 2 displays the percentages of the sample rating their relationships as "very positive, mostly positive, equally positive/negative, mostly negative, and

very negative" for the period prior to the AARC and at the time of the interview. At the time of interview, 84.7% reported either "very" or "mostly positive" family relationships at the time of interview, in comparison with 94.1% who reported "very" or "mostly negative" family relationships prior to AARC.

A significant number of graduates reported a reduction in family conflict since graduation from AARC. Participants were asked to rate the degree of conflict within the family on a 4-point Likert scale ranging from 1 ("A lot") to 4 ("none"). The degree of family conflict improved from a mean rating of 1.14 (*SD* = .41) for the period prior to the AARC to 2.93 (*SD* = .72) for the period since graduation (t (84) = -20.92, $p < .001$). This is graphically demonstrated in Figure 3, comparing the period prior to AARC and the time of the interview. At the time of interview 90.6% reported "a little" or "none" conflict, compared with 88.2% that reported a "a lot" of family conflict prior to AARC.

A reduction in involvement with the criminal justice system, as reflected in civil or criminal charges was reported. Prior to attending the AARC, 56.5% of respondents reported having been charged with a crime. Since graduation, this figure dropped to 17.6% (*Cochran's Q* = 27.92, $p < .001$), and, at time of interview, 4.7%.

A change in peer relationships was demonstrated as one of the most consistent changes since graduation from AARC. Only 3.5% of the sample reported having "mostly" or "very positive" peer relationships in the time prior to AARC. That proportion increased to 92.9% at the time of interview (*Cochran's Q* = 64.06, $p < .001$).

With graduation from AARC, those responding report a significant change in their involvement with recreation activities. The percentage of the sample who reported being "somewhat" or "very" active recreationally increased from the period prior to the AARC (35.3%) to the period since AARC graduation (89.4%) (*Cochran's Q* = 39.19, $p < .001$).

3.5 Self Esteem

The proportion of interviewed graduates rating their self-esteem as "mostly" or "very positive" increased significantly between the period prior to the AARC (1.2%) to the period since AARC graduation (74.1%), Cochran's Q = 62.00, $p < .001$. Figure 4 provides additional data on the proportion of the sample rating their self-esteem as "mostly" or "very positive" for each time period assessed.

3.6Attention Deficit disorder

Symptoms of, and treatment for ADD/ADHD were reported as substantially different following graduation from AARC. Participants were asked to indicate whether they had been diagnosed with ADD or ADHD at different time periods. Among participants, 37.6% reported having been diagnosed with ADD/ADHD prior to AARC, with 27% still meeting the criteria at the time of admission. At the time of interview, 3.5% of clients reported this diagnosis, since completing AARC. Among those diagnosed, 90.6% reported having been prescribed medication for ADD/ADHD prior to AARC attendance. No participants reported being prescribed medication either since AARC graduation or at the time of the interview. Additionally, 73% of those who had been previously diagnosed indicated their symptoms had decreased since graduation.

Youth who entered AARC with an ADD/ADHD diagnosis experienced improvements with family relationships. Specifically, this group rated their family relationships significantly more positively (M = 2.03, SD = .82) for the time period since AARC participation compared to the time period prior (M = 4.59, SD = .50), t (28) = 15.80, $p< .001$. Ratings of peer relationships also improved for the time period prior to AARC (M = 4.03, SD = .78) to the period since completing the AARC program. (M = 1.93, SD = .75), t (28) = 10.82, $p < .001$.

For those diagnosed with ADD/ADHD prior to AARC admission, employment increased from 65.52% prior to AARC entry to 100% since AARC graduation (*Cochran's Q* = 10.00, $p < .01$). Prior to attending the AARC, 65.52% of this group reported having been charged with a crime. Since graduation, this figure dropped to 24.14% (*Cochran's Q* = 10.29, $p < .01$). Although the proportion that completed high school increased following completion of the AARC program (6.90% vs 27.59%), the difference was not statistically significant (*Cochran's Q* = 3.60, $p = .058$).

3.7 Mental health.

Participants were asked to indicate whether they had been diagnosed with a mental illness. Among respondents, 32.9% reported having been diagnosed with a mental illness prior to AARC, 4.7% since AARC, and 3.5% at the time of the interview. Of those graduates reporting a mental health diagnosis at the time of treatment entry, 88.5% had been prescribed medication prior to entering the AARC, 3.8% since the AARC, and 0% were prescribed medication at the time of the interview. Of those diagnosed with mental illness, 92.6% indicated their symptoms had decreased since completing treatment at AARC.

Family relationships improved amongst youth who entered AARC with a diagnosis of mental illness. Specifically, this group rated their family relationships significantly more positively ($M = 2.21$, $SD = .93$) for the time period since AARC participation compared to the time period prior (($M = 4.79$, $SD = .42$), $t (23) = 13.63$, $p < .001$). Ratings of peer relationships also improved for the time period prior to AARC ($M = 4.29$, $SD = .62$) to the period since AARC participation ($M = 2.00$, $SD = .89$), $t (23) = 9.68$, $p < .001$.

3.8 Twelve Step Program Involvement

At AARC, the program is based on Twelve Step participation, and this is reflected in active involvement during, and participation after, graduation from AARC. None of the participants indicated they were "very involved" in Twelve Step programs prior to entering AARC. That proportion increased to 96.5% who rated being "very involved" in a Twelve Step program during the AARC program, *Cochran's Q* = 82.00, $p < .001$. For the time period since AARC, the percentage of graduates who reported being "very involved" in a Twelve Step Program dropped to 52.9% (*Cochran's Q* = 33.39, $p < .001$).

Regardless of the decrease in participation with time after graduation, the majority of graduates acknowledged the usefulness of a Twelve Step program. During AARC treatment, 90.0% of this group rated Twelve Step programs as being "very useful," (*Cochran's Q* = 62.00, $p < .001$). Among the entire sample, including those with no Twelve Step experience prior to AARC treatment entry, 91.8% rated a Twelve Step program as "very useful" during their treatment at AARC.

3.9 Feedback on the AARC Recovery Process

Graduates were asked to rate the impact of AARC treatment on their lives. The impact was rated as being "very" or "mostly positive" by 95.3%. The majority of graduates (70.6%) stated they were very satisfied with the services they received while attending AARC.

3.91Interviews of parents

Of the 30 interviewed parents, 90% confirmed the reported sobriety of their child. Amongst the parents of non-respondent clients, 18.2% (2 of 11) reported their son/daughter had been sober at the time of interviews.

The impact participation in AARC had on their son's/daughter's alcohol and drug use was rated as "mostly" or "very positive by 96.6% of respondent parents and 81.8% of non-respondent parents.

Similar to the report compiled from the AARC client graduate responses, parental reports confirmed decreases in substance use and improvements in education, employment, family relationships, social relationships, and mental health functioning from the time prior to attending AARC to the time following graduation.

Of interest are the responses of parents to the following two questions. The first question was, "In your own words, please describe how your son's/daughter's involvement at AARC has impacted their life." The second question was, "On a personal note, what has your son's/daughter's involvement at AARC meant for you?" All responses to these questions are documented in Appendix 3.

4. DISCUSSION:

4.1 The AARC Treatment Model

The Alberta Adolescent Recovery Centre (AARC) is a 12-step recovery orientated long-term drug and alcohol treatment program for adolescents between the ages of 12-21. The program model for AARC has been previously described(Vause, 1994).

In the program description, Vause describes the majority of AARC's clients as "compulsive, poly-drug users who have serious family and psychological problems…with turbulent or chaotic behavior, compounded with immaturity and a general lack of no chemical coping skills" Vause further explains that lack of maturity and emotional development are a result of the developmental arrest caused by prolonged drug use. It is for this reason that the average length of treatment for AARC's clients and families is 10 months to a year.(Vause, 1994)

Vause describes that AARC functions upon the disease model of addiction, as follows. Chemical dependence is a "chronic, progressive, primary, psychosocial, biochemical, genetic, and relapsing condition which affects every domain of the adolescent's life and family". Although AARC's philosophy is derived from the disease concept, it incorporates the bio/psycho-social/spiritual approach to the treatment of adolescent addiction. Because the primary symptom of chemical dependence is continued drug and alcohol use despite bio-psycho-socio-spiritual deterioration, it is essential that AARC clients achieve abstinence during and post treatment in order to fully recover from the devastating consequences of addiction. Abstinence and recovery from addiction are sought through the adoption of the Alcoholics Anonymous 12 steps of recovery.(Alcoholics Anonymous World Services, 1976) These steps are incorporated into the program, as follows.

AARC is comprised of 4 treatment levels, each level consisting of 2 or more of the 12 steps of recovery. Each level incorporates a set of rules and a level completion criterion. AARC clients graduate the program once they have grasped the concepts of the 12 steps of recovery and completed the outlined criteria of each treatment level.

Upon admission, clients are removed from their home environment and are placed in homes with families who have progressed to Levels 2, 3, or 4 of the AARC program. These homes, hosted by families currently in treatment, are called "Recovery Homes". Every Level 1 client resides in a Recovery Home other than their own until they earn Level 2 themselves. At this time their role will change, and they, along with their families, begin taking new clients to their home with their family until completion of treatment.

Level 1 of the AARC program is comprised of Steps 1, 2, and 3 of the 12 steps of recovery. Step 1 entails the confrontation of and emergence from the addict's denial regarding his/her

substance use and its' resulting consequences. This is a difficult process for the addict, as he/she is desperate to maintain the illusion of controlled substance use. Once the addict's denial is exposed he/she begins to accept loss of control and the need for help. Steps 2 and 3 provide the addict with a solution when he/she is confronted with the thoughts and feelings that often lead back to compulsive substance use. This is the introduction to the spiritual aspect of the 12 step recovery program. These Steps require the addict to become open minded and willing to accept spiritual help and a decision to follow through with the remaining steps of recovery.

Level 2 of the program consists of Steps 4 through 7. Once a client earns Level 2 he/she returns to the family home. At this time the client and family begin taking home Level 1 clients. Steps 4 and 5 require the addict to make a moral inventory of his/her life and share it with another person. This process exposes and enables the addict to identify destructive patterns of behavior that will lead, without change or modification, to continued substance abuse. On Steps 6 and 7 the addict's focus is change and modification of destructive patterns of behavior, identified in the earlier steps. Throughout Levels 1 and 2 the addict attends AARC Monday through Saturday and remains with the Recovery Home family on Sunday.

Level 3 of the program includes Steps 8 and 9 of the 12 step program of recovery. These steps involve a willingness to forgive oneself and others as well as a willingness to make amends to those harmed. The addict is then required to make face to face amends to family members who are involved in the treatment process. Once a client earns Level 3 of the program, reintegration into the broader community takes place through attendance at school and/or employment. It is at this time that clients begin attendance at 12 step recovery meetings outside the AARC facility.

Level 4 of the AARC program is comprised of Steps 10 through 12. These three final steps of the 12 steps of recovery require a daily practice of the acquired steps in every domain of life. A willingness to seek and achieve ongoing spiritual growth, and demonstration of service to those who still suffer is required. Continuing to carry the message of recovery through sharing experience, strength, and hope closes the circle of recovery.

Each AARC client graduates the program once he or she has grasped the concepts of the 12 steps of recovery through completion of the outlined criteria of each treatment level.

The AARC treatment program does not focus solely on the client. The family is required to participate in treatment and embrace recovery, as well. Management of the client includes comprehensive assessment, treatment, and aftercare. Family treatment includes frequent participation in group counseling sessions, peer counseling, and participation in activities which facilitate recovery for the family – through a confrontational and caring therapeutic process.

4.2 The need for evaluation

Substance abuse and addiction have become of increasing concern within the adolescent population, with perhaps up to 10% of those who use drugs becoming addicted. Similar concerns appear to exist in other countries, such as the United States(Harrison & Asche, 2001). Clearly, substance abuse and addiction is a major problem in our communities. Intervention for adolescent addiction is conducted in many ways, and there are many possibilities for treatment – crossing the spectrum from short term non professional intervention to spiritual intervention, to long term intensive family-centered care(Latimer et al.). The lack of homogeneity in regard to adolescent treatment makes program-to-program comparisons difficult, if not, impossible.

The effectiveness of a single program must, by the very nature of the variety of interventions used, be an evaluation limited to that program. It is important, however, to measure success and to use measures which can be compared between programs. Comparing the success or failure of various types of interventions allows the treatment community to better assess client selection, intervention style, and follow up care needed in successful treatment of specific groups of addicted adolescents. For clients with severe dependency problems, longer term treatment programs appear to have greater success (Emerick, 1979; Hubbard et al., 1997; D. D. Simpson, Joe, & Brown, 1997; Spicer, 1991; Stout et al., 1996; Times, 1984). The Alberta Adolescent Recovery Centre provides a long term treatment program for severely addicted adolescents, and this evaluation is an attempt to identify and communicate commonly accepted measures of success for that program.

4.3 Study design and selection of sample

The nature of this evaluation did not permit constructing a randomized controlled trial with a group of untreated individuals – addiction, by its nature, induces isolation and resentment, and an untreated control group would not be reachable. It is also difficult to make a comparison with another long term residential program for adolescents, as no program using comparable client selection, treatment intervention and treatment duration is currently known. This is the first evaluation of treatment at AARC, and we chose as large a sample size as we could effect, acknowledging the constraints of obtaining access to all graduates.

This study was based upon a questionnaire conducted in the second quarter of 2003, and of a selected sample of 100 graduates, numbers 100 to 199 from the AARC program. The sample consisted of graduates who had completed treatment at one year or less (32.1%), two to three years (50.6%), and four or more years (17.3%) prior to beginning the research. These time frames are thought to incorporate significant periods for post treatment evaluation to be meaningful (Hanstein, 2000). Some researchers have argued that periods as little as 3 months post-completion can be meaningful(Moos et al., 2000). Others have proposed one year (Miller & Sanchez-Craig, 1996). Some authors suggest that shorter time frames following treatment will skew outcome data towards favorable outcomes that may not reflect a true picture of the effect of treatment (Monahan & Finney, 1996). The current research has been constructed to review a broad period of follow up that includes longer periods away from treatment completion. We acknowledge that a more meaningful number for comparison between programs might be a three month, a one year, or a five year evaluation. We do not, currently, have such a process in place to conduct such evaluations, and acknowledge the value of, and need for that type of arrangement.

Participants were chosen on a consecutive basis in order to limit an effect from selection bias (Stinchfield, Niforopulos, & Feder, 1994). Recognizing, as well, that follow up contact bias could affect results, efforts were made to reach a large proportion of the original 100 consecutive admission participants(F. K. Del Boca & Noll, 2000; F. K. a. D. Del Boca, J., 2003; Polich, 1982), and where we failed to do so, we interviewed the parents of non-respondents. Questionnaires inquired about a wide range of measures -- alcohol and drug use, employment, education, family life, involvement in criminal justice system, mental health and participation in 12 step programming, to assist in validation of physical and emotional sobriety.

In this population, the severity of addiction is high and co-morbid disorders are frequent. In order to provide a uniform classification for the level of addiction, DSM IV criteria were used. DSM IV (Association, 1994) states that the “essential feature of Substance Dependence is a cluster of cognitive, behavioral and physiological symptoms indicating that the individual continues use of the substance despite significant substance related problems.” The criteria include the presence of three or more of: tolerance; withdrawal; the consumption of larger

amounts or over a longer period than was intended; a persistent desire or unsuccessful efforts to cut down or control the substance use; a great deal of time spent in obtaining, using or recovering; either abandonment or reduction of important social, occupational or recreational activities; and continued consumption despite knowledge of the existing problem with drug use. Contemplating various definitions of impairment within the literature, and the evaluations that have been done, this population is defined as severely impaired.(Bergmann et al., 1995; Booth & Kwiatkowski, 1999; Brown, 2001; C. E. Grella, Hser,Y., Joshui,F. and Rounds-Bryant,J., 2001; C. E. Grella, Joshu, V.and Hser, Y.I., 2004; Guo, 2002; Harrison & Asche, 2001; Needle, 1988; S. E. Rivers, Greenbaum, R.L., and Goldberg, E., 2001; Winters, Stinchfield, Opland, Weller, & Latimer, 2000)

DSM IV also includes criteria for a lesser diagnosis of a Substance Abuse Disorder (SAD). This is related to "a maladaptive pattern of substance use leading to clinically significant impairment or distress". The DSM IV lists 4 criteria of which at least one must be met for this diagnosis. These are: recurrent use that results in failure to fulfill major obligations; use in situations where it is physically hazardous; use which creates legal problems; or use which creates recurrent social or interpersonal problems. It is these criteria that determine if there is Substance Dependence.

A self report structured interview was used, and self report can yield valid, useful estimates of drug usage(Brener, 2003; Smith, 1995).

4.4 Gender

We observed a difference between males and females in regard to client profile. Females demonstrated less frequent daily usage of substances, less employment, less involvement with the Criminal Justice System, and lower self esteem. In regard to psychiatric diagnosis, females had a lower frequency of ADD/ADHD diagnosis and a higher frequency of diagnosis of mental illness prior to entering the AARC program. We are unable, in this study, to confirm whether these differences are specific to this population, or whether they are simply a reflection of a broad societal trend amongst adolescents.

4.5 Changes in substance use and social behavior

Among surveyed graduates, substantial decreases in substance use and improvements in education, employment, family relationships, social relationships, and mental health function were demonstrated from the time prior to AARC to the time following graduation. Increased attendance and improved performance, attitudes and behavior were reported by graduates for school and employment situations. Involvement with the Criminal Justice System significantly decreased over time, with the majority reporting no current criminal charges at the time of the follow-up interview. The majority of graduates reported positive relationships with their families and peers since graduation from the program. In addition, graduates reported decreases in ADD/ADHD and other mental health problems. Many of the complications often associated with these diagnoses, such as difficulties with family, work, school, and peers and involvement in the criminal justice system, were reported to have improved significantly. This tended to corroborate the symptom improvements reported. Improved self-esteem was also reported by a majority of the graduates.

Overall, graduates interviewed were very satisfied with the services they had received at AARC and indicated their participation had a positive impact on their lives.

Interview of parents was helpful in assessing the response to treatment at AARC and in validating the results in relation to sobriety and impact on drug and alcohol use. We were able to interview only 11 of 15 parents of the non responders, and 18% of their children were

reported as sober at the time of interview. The refusal by clients to participate in the interview process would appear to be associated with a very low measure of sobriety, based on parent interviews.

4.6 Limitations

This evaluation design will not permit either generalization of the results beyond AARC's own implementation or disaggregation of multiple dimensions of the intervention to test alternative attribution hypotheses.

AARC clients are admitted frequently on referral from the court, on recommendation from Child Welfare Services, or at direction of their parents -- an involuntary basis which eliminates follow up research bias associated with self selection, yet the nature of admission and the disease process mitigated against initiating a comparative study with a control (non treated) group.

This is a treatment-completion outcomes study that includes only those AARC graduates who successfully finished the program. As such, outcomes reported here likely reflect the upper limits of outcome and would change if the sample included those who left the program under different circumstances. We have not correlated measurements of recovery with time since graduation, but it is acknowledged that the longer a client is graduated from a program, the more non treatment factors are likely influencing the client's current status. If it was projected the 15 clients not available for interview were not abstinent, then the result for the entire population of 100 would result in an abstinent rate of 85% at the time of interview. As with all naturalistic studies, the lack of no-treatment or other control conditions precludes causal statements about the role treatment specifically played in the improved functioning of the sample following graduation.

There is debate about significance of the duration of time out of treatment required for meaningful evaluation in relation to defining successful treatment, be it abstinence from drug use or "harm reduction".(McLellan et al., 1994; S. M. Rivers, Greenbaum, & Goldberg, 2001) In comparing treatment modalities, a measure of consistency would be provided by assessing the treatment outcomes at a consistent interval following treatment; we currently are unable to do this. For the purpose of this evaluation, we were seeking to assess the pattern of recovery post treatment in this program.

Abstinence rates are impacted by the length of time after discharge (with relapse rates increasing as a function of time out of treatment). For the purpose of this study, use frequencies since graduation were broken down by time since graduation.

Descriptions of involvement with the criminal justice system may not fully reflect changes in behavior, as this evaluation documented criminal or civil charges only, as opposed to involvement in crime for which the client may not have been caught.

Questions of validity and reliability of data are always raised when self-report is the primary source of information, regardless of the steps taken to minimize socially desirable response sets. Also, because this was a retrospective study, memory distortion may have impacted self-report. Finally, participants were asked about their functioning as it occurred "prior" to and "since" graduation. As such, time periods were not held constant and made direct comparisons between the time periods difficult. For example, for a given participant the time period prior to AARC may refer to a period of 15 years whereas the time since AARC may refer to a period of 2 years. Differences in length of time since graduation between participants also occurred. For example, one graduate may have been out for 1 year; another may have been out for 3 years. We acknowledge that the longer a client is out of the treatment program the more non-treatment factors are likely influencing the client's current status As a result, "before and after" comparisons must be interpreted with caution, even though they are an essential measure of

program performance. We have attempted to use the parent questionnaires for validation of client information, particularly in relation to sobriety, reducing the uncertainty of using self report as a sole source of information.

It will be important in the future, to assess sobriety of all graduates at a consistent time interval following completion of treatment. A suitable mechanism could be implemented to obtain consent for and collect information regarding recovery and family functioning at fixed intervals following graduation.

5. Conclusions

The long term, intensive AARC program provides significant, sustainable changes for a large number of adolescents admitted to treatment with severe substance dependency disorders. These changes include sustaining both sobriety and the many lifestyle changes that support sobriety. For male and female clients, physical, emotional, and behavioral characteristics all demonstrated improvements. Decreases in substance use with improvements in education, employment, family relationships, social relationships, and mental health functioning have been demonstrated. For clients with either ADD/ADHD or other mental health disorders prior to AARC, the need for continuation of medication was eliminated. For all recovery criteria evaluated, this outcome evaluation demonstrates significant improvement in the vast majority of clients, when compared with pre treatment. For adolescents with a Substance Dependence Disorder and Global Assessment of Functioning at a level 55 or lower, the AARC treatment model demonstrates a high measure of success.

Acknowledgments

This manuscript, in part, has evolved from an outcome study of the Alberta Adolescent Recovery Centre. The outcome study was conducted by Michael Patton, and the analysis of data was conducted by Reid Zimmerman and Valerie Slaymaker, PhD, LP from the Butler Center for Research of the Hazelden Foundation. We are grateful for the assistance of Joanne Miller for review of the data collection and statistical analysis, and suggestions regarding improvement of the manuscript. The evaluation was funded by a donation from an anonymous donor specifically for the purpose of conducting an outcome study of the AARC Recovery Program.

Table 1 Percentage of interviewed graduates reporting substance use frequency by time since graduation

Post graduation	***None***	*One time*	*Monthly*	*Weekly*	*Daily*	*Multiple/day*
1 year or less (n=10)	**90**	0	0	0	0	10
13-24 months (n=30)	**60**	3.3	6.7	3.3	16.7	10
25-36 months (n=21)	**52.4**	4.8	9.5	4.8	23.8	4.8
>36 months (n=24)	**41.7**	4.2	4.2	12.5	25	12.5

Table 2 Longest period of continuous sobriety of interviewed graduates, maintained by time since graduation

Time since graduation	***One month***	***Six months***	***Twelve months or more***
One year or less (n=29)	0%	6.9%	93.1%
Two to three years (n=42)	2.49%	4.8%	92.9%
Four or more years (n=14)	0%	14.3%	85.7%

Table 3 Positive changes identified in personal and social functioning of graduates.

All graduates who were interviewed identified:

- Increased high school completion ($p < .01$)
- Increased College or University completion ($p < .01$)
- Increased working full time ($p < .001$)
- Improved employment and work behaviors ($p < .001$)
- Positive family relationships ($p < .001$)
- Lesser degree of family conflict ($p < .001$)
- Fewer charged with a crime *(*$p < .001$)
- “Mostly” or “very positive” peer relationships ($p < .001$)
- “Somewhat” or “very” active recreationally ($p < .001$)
- Self-esteem rated “mostly” or “very positive” *(*$p < .001$)
- Graduates “very involved”, 12 Step program ($p < .001$)

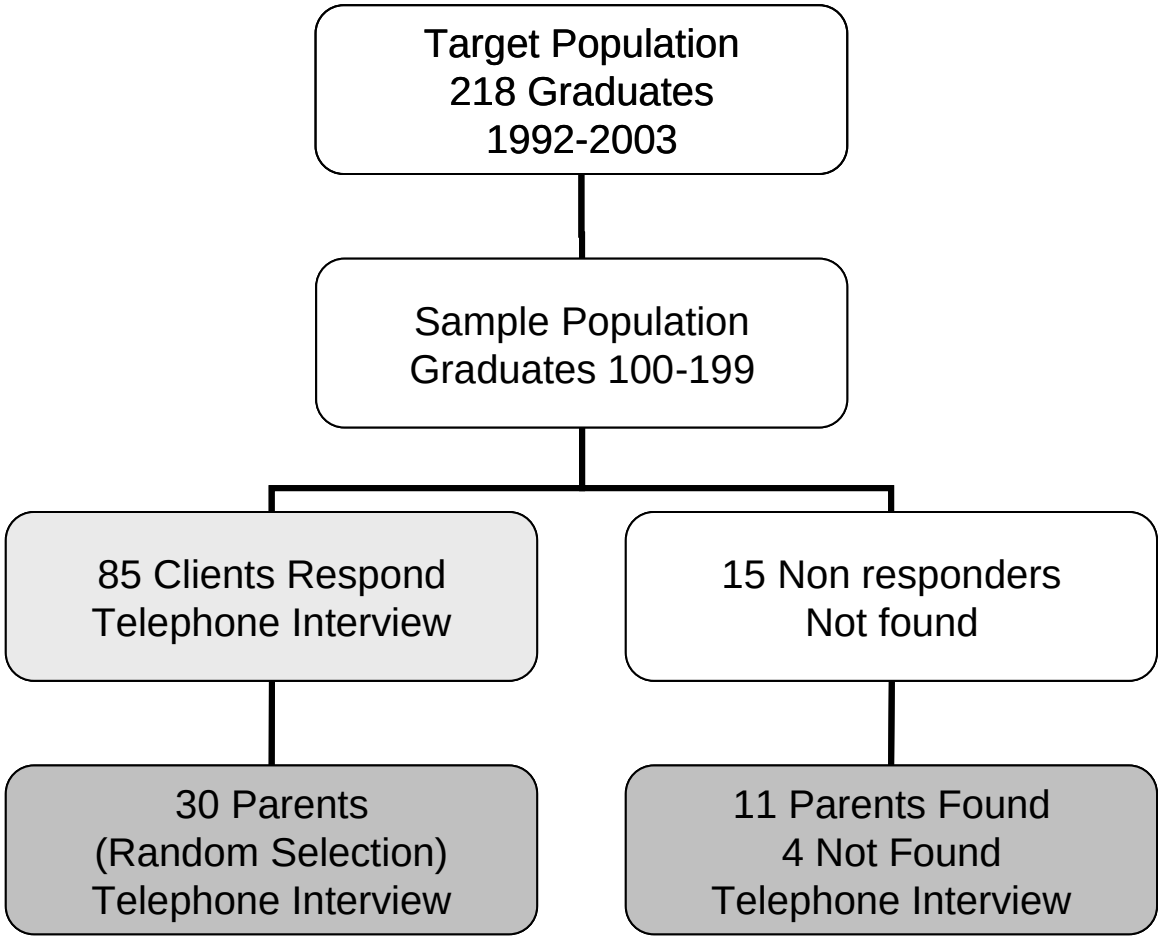
Graduates with previous diagnosis of ADD/ADHD identified:

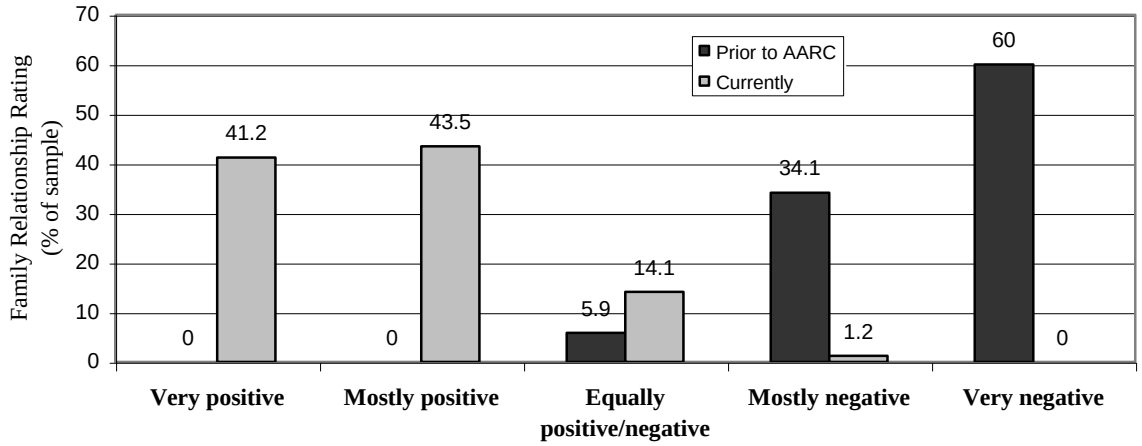
- No medication
- Family relationships more positive ($p < .001$)
- Peer relationships also improved ($p < .001$)
- Employment increased ($p < .01$)
- Fewer charged with a crime *(*$p < .01$)

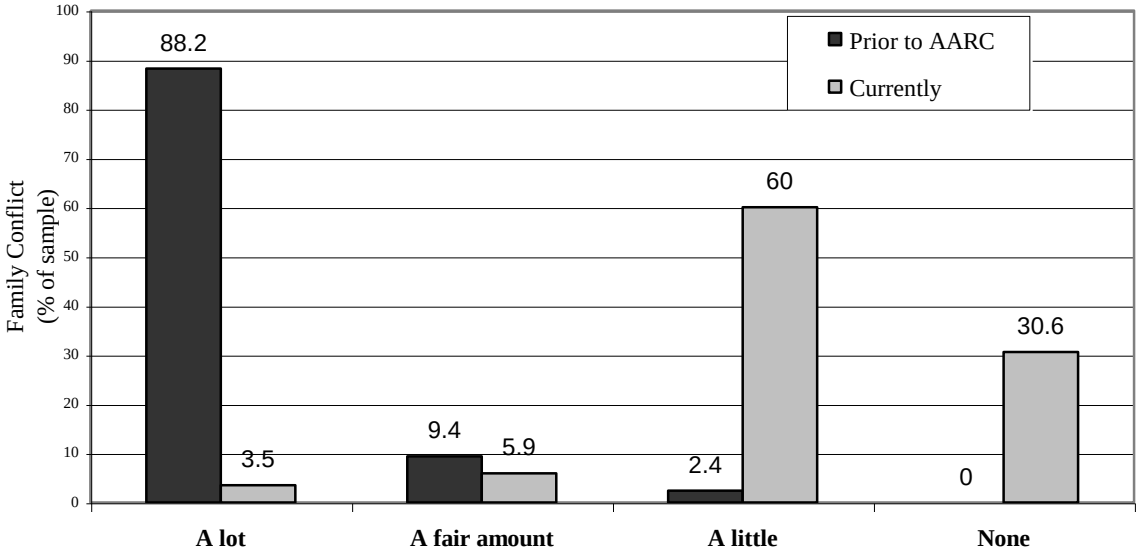
Graduates with a previous Mental Health diagnosis identified:

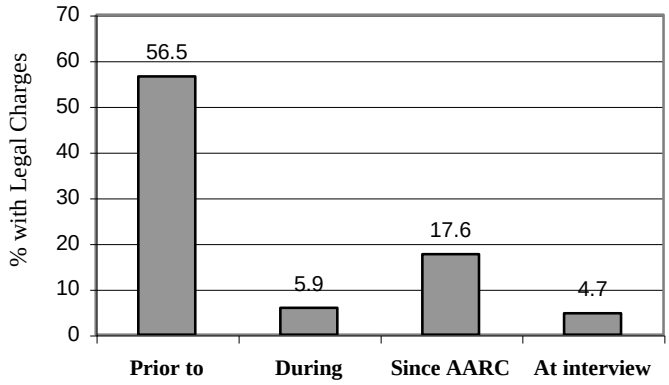
- No medication
- Family relationships more positive ($p < .001$)
- Peer relationship ratings improved ($p < .001$)

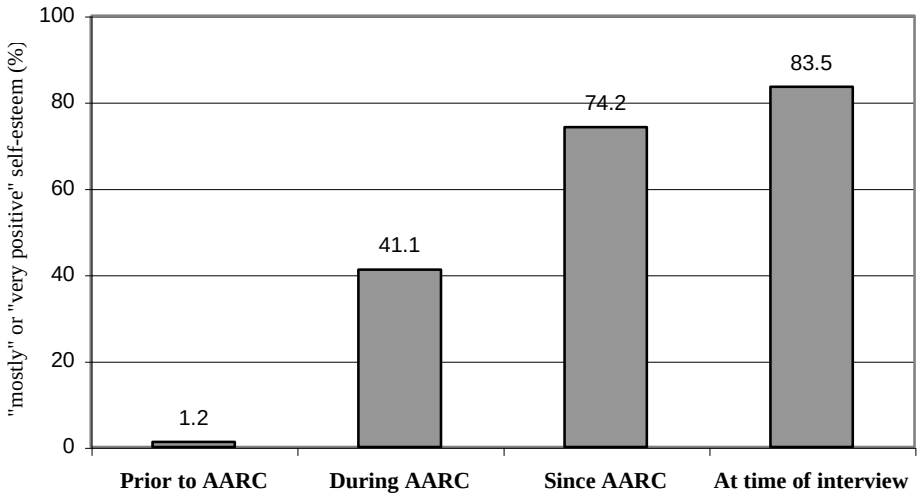
Figure Captions

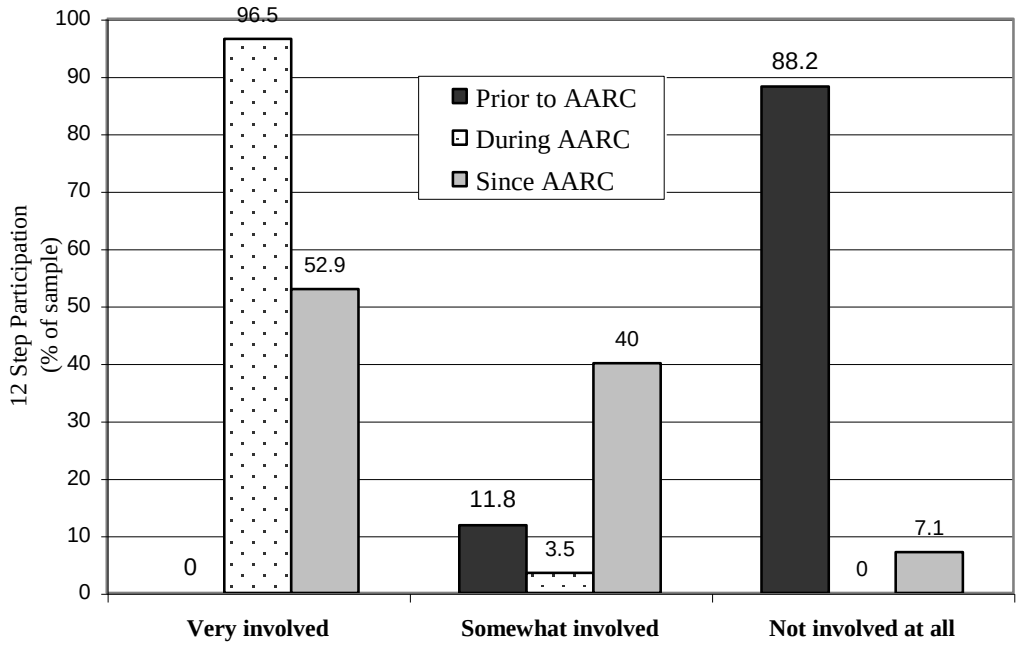

Target Population
218 Graduates
1992-2003
Sample Population
Graduates 100-199
85 Clients Respond
Telephone Interview
15 Non responders
Not found
30 Parents
(Random Selection)
Telephone Interview
11 Parents Found
4 Not Found
Telephone Interview


Family Relationship Rating
(% of sample)
70
60
50
40
30
20
10
0
Prior to AARC
Currently
0
41.2
0
43.5
5.9
14.1
34.1
1.2
60
0
Very positive
Mostly positive
Equally positive/negative
Mostly negative
Very negative


Family Conflict
(% of sample)
100
90
80
70
60
50
40
30
20
10
0
Prior to AARC
Currently
88.2
3.5
9.4
5.9
2.4
60
0
30.6
A lot
A fair amount
A little
None


% with Legal Charges
70
60
50
40
30
20
10
0
56.5
5.9
17.6
4.7
Prior to
During
Since AARC
At interview


100
80
60
40
20
0
"mostly" or "very positive" self-esteem (%)
1.2
41.1
74.2
83.5
Prior to AARC
During AARC
Since AARC
At time of interview


12 Step Participation
(% of sample)
100
90
80
70
60
50
40
30
20
10
0
96.5
52.9
0
11.8
3.5
40
88.2
0
7.1
Prior to AARC
During AARC
Since AARC
Very involved
Somewhat involved
Not involved at all

APPENDIX 1

AARC Parent Questionnaire – Respondent Parents

16. In your own words, please describe how your son's/daughter's involvement at AARC has Impacted their life.

- It's allowed her to get a start over from scratch – the ultimate do over.
- It totally changed her life. From someone who didn't want to live to someone who gets the most out of every day – and from someone who didn't care about herself or anyone – to someone who is helping people the best way she knows how.
- It's helped he a lot and she learned a lot. She can judge things more positively – she became a stranger, more open and honest.
- It saved his life.
- It gave him the solution – an opportunity to find his way out of his drug use.
- It was a huge and positive learning curve of numerous life skills.
- Instead of him wanting to end his life he wants to live it. He is very spiritual and close to his family. Now he has a life.
- I've seen him grow significantly spiritually – he is much more principled and honest - much more caring. Growth in self-esteem.
- He wouldn't have life without AARC. He turned himself around with the help of AARC and its staff.
- It has given her self-esteem. Her relationship with Dr. Vause was highly positive for her. She has knowledge of the disease, awareness, maturity, her defects. She has a chance at a good life. She is alive because of AARC.
- It's changed her in a more positive way. She is now the person she should be. She's grown up a lot. She has a lot more confidence and self-esteem. She's just a completely different person.
- He's still alive today, and he's sober and working, and being a good dad. He's a more positive person today and his choices are better.
- As the parent I see it as something as so positive and essential in her ending up where she is now. I see it as the thing that saved her life.
- It totally changed his life. He knows who he is and how to handle himself in all situations. He has the tools to live now.
- It changed his life completely. His life is so full now and he is much happier.
- It altered the course of his life. It gave him the ability and understanding that his choices determine his life. And it gave him a foundation that he could hold onto to make better choices.
- It completely changed it. It sopped her alcohol and drug use and gave her much more self-esteem. It really turned her around.
- It saved her life.
- I think we'd both be dead if it weren't for AARC.
- It's had a huge impact on her life. It's pretty much saved her life.
- It saved his life – it saved all our lives.
- It saved it. I don't know that she should have died, but she was definitely going down. She would have had a wasted life – now she's excited about life.
- It turned it around.
- It definitely made him a better person. It helped him be more honest, care more about others, and admit when he's wrong.
- I think he tries harder and he knows what works. He thinks before he acts now.

- Miraculous, but not immediate. She certainly left the program sober, but some of the other changes occurred more gradually – like her sense of responsibility and consideration of others.
- She's an active participant in her own life – it's amazing. She went from a blaming irresponsible girl to a responsible adult.
- He has the tools to handle himself now. It was a good teaching experience for him and he got a lot of the garbage he had built up inside of him out of him. He also learned to be honest.
- It completely changed his life 100%. Today he has plans, goals, and he is succeeding. The change is unbelievable. He had healthy relationships, a girl friend, our relationship is great, he has good friends. He wouldn't have made it otherwise. The impact has just been phenomenal.
- If she hadn't gone to AARC she'd probably be dead or gone somewhere – she certainly wouldn't be in our life.

17. On a personal note, what has your son's/daughter's involvement at AARC meant for you?

- It's let me have a do over myself in terms of my relationship with my daughter and learning how to live my life. It was almost as profound for me as it was to her.
- A relationship with (the adolescent).
- It's meant a lot. It gave her live back. I can't describe how grateful we are.
- My involvement at AARC saved my spiritual life.
- It's changed my life – very positive – a gift.
- The same thing (as #16). It's been a great growth opportunity to make a difference.
- I've got a new life – I finally grew up. I've got my family back – my life is so much better.
- My life is much less chaotic. I have a relationship with my spouse that has improved significantly. Our whole family is much closer, and I have hope for my kid's future.
- I gained a son back. I am most grateful.
- I gave up everything to bring her here. I know that I have done everything in my power to help her. Everything has improved for all of us.
- It's been very positive. I've learned a lot about myself and my daughter. We have a more honest relationship than we did before.
- It gave him his life back and gave me a chance to get my life back. I just really think that without AARC he wouldn't be here – he wouldn't have survived.
- It's given me back the relationship with my kid that I always wanted. – She's been able to believe in herself again.
- Pretty amazing. It gives me a lot of peace. I know he's looked after now no matter what he does.
- It's made me feel good about his life and the direction he's gong.)
- It allowed me to let go of him to make his own life.
- It's been a tremendous benefit to our relationship. It moved us from having no relationship to having a wonderful relationship.
- It's given me the ability to live in a more truthful world and going after my needs and desires.
- For me it meant getting honest and sober – I don't think I would have sobered up or even stayed alive had I not come into AARC. It means everything to me.

- It's changed my life. It helped me learn how to deal with my personal life and look at myself, as well as learning to live with an addicted child. AARC has dramatically changed our entire family's lives.
- We have a family again – learning how to deal with life and relationships. We have choices today.
- It would have been a life of fear and stress forever – it has given me contentment – it's allowed life to be good.
- It gave me a life.
- It's meant a better life for our whole family – we have joy in our lives – all the friends we've made.
- It's changed my life. It allowed me to get a handle on a lot of things and make a lot of changes. It made it possible for me to get through my wife's death.
- A huge amount. Our relationship prior to AARC and even after AARC was really poor, but since her dad's death our relationship has been really good, and I know that her sobriety is a big part of that.
- It gave us a relationship that I never thought we'd have. It taught me that it's not my fault. I'd need a day to describe how much AARC has done for us. I'm grateful – I have my child.
- It took me out of the darkness. I am very very grateful today. I learned a lot myself and learned how to be honest.
- It's made me proud and taken a lot of the grief out of my life. I got sober myself – it's given me a hell of a lot of freedom.
- It gave me a life - a whole new way of life – and I never thought I could even have a life outside of my kids. My friends today are from AARC and I can talk to them about anything.

APPENDIX 2

AARC Parent Questionnaire – Non Respondent Parents

16. In your own words, please describe how your son's/daughter's involvement at AARC has Impacted their life.

- It saved his life. He has said that himself too.
- I would say that AARC has spoiled his drug use. AARC has given him an opportunity to be sober – it's shown him a way out.
- It left an impression. I'm sure it's impacted it absolutely. I don't really know.
- It's impacted her life because she knows differently now. She knows what to do and when she chooses to do that she does pretty good.
- Without AARC he wouldn't be alive today. It has totally turned his life around and we are very grateful to the program.
- It's probably the best year of her life she's ever had. I think she would, in a sober moment, agree.
- It saved it – it's given her a life long tool and understanding.
- Mostly positive. Every time he gets in trouble he goes back to AARC. He knows where to get help.
- I know he remembers AARC. What he learned there is still inside of him. He knows what he needs to do, but he doesn't choose it.
- Hugely. I think it's impacted it definitely – it was a positive influence.
- He knows what he has to do, but he's just not willing to make those changes.

17. On a personal note, what has your son's/daughter's involvement at AARC meant for you?

- It's given me hope and given me a life.
- It changed our lives positively. It's shown us the way out. It was a very positive experience and it gave us our lives back.
- Very positive. The 12-steps and the community of people, commitment of staff – it gave me something to work with.
- I think it saved our family – my marriage. It has been nothing but positive.
- It's made me a stronger person. It made me look at my part – that I can't solve everyone's problems – just to let go. I stopped blaming myself and see it totally different now.
- With my children it's probably been the best year of my life.
- Everything. If it hadn't been for AARC I don't know if she'd have lived.
- It's brought me into a life of recovery. Because of that, even thought my son's in big trouble right now, I can still have a positive relationship with him.
- It's been the best thing for me – my emotional and spiritual well-being. I have a way out of his insane behavior.
- It's meant a lot. It's meant tremendous support. I've leaned a lot about the disease. It's been very positive for me.
- It's meant a lot. It was place to go that saved him even though he's using today.

References

Alcoholics Anonymous World Services, I. (1976). *Alchoholics Anonymous* (Third ed.). New York City: Alcoholics Anonymous World Services,Inc.

Association, American. Psychological. (1994). *Diagnostic and Statistical manual of Mental Disorders,* (Fourth Edition ed.). Washington, D.C: American Psychiatric Association.

Bauman, K. E., & Ennett, S. T. (1996). On the importance of peer influence for adolescent drug use: commonly neglected considerations. *Addiction, 91*(2), 185-198.

Bergmann, P. E., Smith, M. B., & Hoffmann, N. G. (1995). Adolescent treatment. Implications for assessment, practice guidelines, and outcome management. *Pediatr Clin North Am, 42*(2), 453-472.

Booth, R. E., & Kwiatkowski, C. F. (1999). Substance abuse treatment for high-risk adolescents. *Curr Psychiatry Rep, 1*(2), 185-190.

Brener, N. D., Billy, J.O. and Grady, W.R. (2003). Assessment of factors affecting validity of self-reported health risk behavior among adolescents: evidence from the scientific literature. *Journal of Adolescent Health, 33*(6), 436-457.

Brown, S. A., D'Amico, E.J., and McCarthy, D.M. (2001). Four-year outcomes from adolescent alcohol and drug treatment. *Journal of Studies on Alcohol, 62*(3), 381-378.

De Leon, G. (1993). What Psychologists Can Learn From Addiction Treatment Research. [Article]. *Psychology of Addictive Behaviors June 1993;7(2):103-109*.

Del Boca, F. K., & Noll, J. A. (2000). Truth or consequences: the validity of self-report data in health services research on addictions. *Addiction, 95 Suppl 3*, S347-360.

Del Boca, F. K. a. D., J. (2003). The validity of self-report data in health services research on addictions. *Addiction, 95*(Supplement 3), S347-360.

Doyle, H., Delaney, W., & Tobin, J. (1994). Follow-up study of young attenders at an alcohol unit. *Addiction, 89*(2), 183-189.

Earleywine, M. (2002). *Understanding Marijuana: A Now Look at the Scientific Evidence*. Oxford: Oxford University Press.

Emerick, C. D. (1979). Perspectives in clinical research: Relative effectiveness of alcohol abuse treatment. *Family and community health, 2*(2), 71-88.

Etheridge, R. M., Hubbard, R. L., Anderson, J., Craddock, S., & Flynn, P. M. (1997). Treatment structure and program services in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors, 11*(4), 244-260.

Farabee, D., Shen, H., Hser,Y., Grella,C.E., and Anglib, M.D. (2001). The effects of drug treatment on criminal behavior among adolescents in DATOS. *Journal of Adolescent Research, 16*(6), 679-696.

Fletcher, B. W., Tims, F. M., & Brown, B. S. (1997). Drug Abuse Treatment Outcome Study (DATOS): Treatment Evaluation Research in the United States. [Article]. *Psychology of Addictive Behaviors December 1997;11(4):216-229*.

Gordon, A. J., & Zrull, M. (1991). Social networks and recovery: one year after inpatient treatment. *J Subst Abuse Treat, 8*(3), 143-152.

Grella, C. E., Hser,Y., Joshui,F. and Rounds-Bryant,J. (2001). Drug treatment outcomes for adolescents with comorbid mental and substance abuse disorders. *The Journal of Nervous and Mental Disease., 189*(6), 384-392.

Grella, C. E., Joshu, V.and Hser, Y.I. (2004). Effects of comorbidity on treatment processes and outcomes among adolescents in drug treatment programs. *Journal of Child and Adolescent Substance Abuse, 13*(4), 13-31.

Guo, J., Hill, K.G., Hawkins, J.D., Catalano, R.P., and Abbot, R.D. (2002). A developmental analysis of sociodemographic, family and peer effects on adolescent illicit drug initiation. *Journal of Child and Adolescent Psychiatry, 41*(7), 838-845.

Hanstein, M. L., Downey,L., Rosengren,D.B. and Donovan,D.M. (2000). Relationships between follow-up rates and treatment outcomes in substance abuse research: more is better but when is "enough" enough? *Addiction, 95*, 1403-1416.

Harrison, P. A., & Asche, S. E. (2001). Adolescent treatment for substance use disorders: Outcomes and outcome predictors. *Journal of Child & Adolescent Substance Abuse, 11*(2), 1-18.

Holcomb, W. R., Parker, J. C., & Leong, G. B. (1997). Outcomes of inpatients treated on a VA psychiatric unit and a substance abuse treatment unit. *Psychiatric Services. 1997 May;48(5):699-704*.

Hser, Y., Grella, C.E., Hubbard, R.L., Hsieh,S., Gletcher, B.W., Brown, B.S. and Anglin, M.D. (2001). An evaluation of drug treatment for adolescents in 4 U.S. cities. *Archives of General Psychiatry, 58*, 685-695.

Hsieh, S., Hoffmann, N. G., & Hollister, C. D. (1998). The relationship between pre-, during-, post-treatment factors, and adolescent substance abuse behaviors. *Addictive Behaviors. 1998 Jul-Aug;23(4):477-88*.

Hubbard, R. L., Craddock, S. G., Flynn, P. M., Anderson, J., & Etheridge, R. M. (1997). Overview of 1-Year Follow-Up Outcomes in the Drug Abuse Treatment Outcome Study (DATOS). [Article]. *Psychology of Addictive Behaviors December 1997;11(4):261-278*.

Latimer, W. W., Winters, K. C., Stinchfield, R., & Traver, R. E. Demographic, Individual, and Interpersonal Predictors of Adolescent Alcohol and Marijuana Use Following Treatment. [Article]. *Psychology of Addictive Behaviors June 2000;14(2):162-173*.

McLellan, A. T., Alterman, A. I., Metzger, D. S., Grissom, G. R., Woody, G. E., Luborsky, L., et al. (1994). Similarity of outcome predictors across opiate, cocaine, and alcohol treatments: role of treatment services. *Journal of Consulting & Clinical Psychology. 1994 Dec;62(6):1141-58*.

Miller, W. R., & Sanchez-Craig, M. (1996). How to have a high success rate in treatment: advice for evaluators of alcoholism programs.[see comment]. *Addiction. 1996 Jun;91(6):779-85*.

Moggi, F., Ouimette, P. C., Moos, R. H., & Finney, J. W. (1999). Dual diagnosis patients in substance abuse treatment: relationship of general coping and substance-specific coping to 1-year outcomes. *Addiction. 1999 Dec;94(12):1805-16*.

Monahan, S. C., & Finney, J. W. (1996). Explaining abstinence rates following treatment for alcohol abuse: a quantitative synthesis of patient, research design and treatment effects. *Addiction. 1996 Jun;91(6):787-805*.

Moos, R. H., Finney, J. W., & Moos, B. S. (2000). Inpatient substance abuse care and the outcome of subsequent community residential and outpatient care. *Addiction. 2000 Jun;95(6):833-46*.

Needle, R., Su, S., Doherty,W., Lavee,Y. and Brown,P. (1988). Familial, interpersonal and intrapersonal correlates of drug use: a longitudeinal comparison of adolescents in treatment, drug-using adolescents not in treatment and non-drug using adolescents. *International Journal of Addictions, 23*, 1211-1240.

Polich, J. M. (1982). The validity of self-reports in alcoholism research. *Addictive Behaviors, 7*(2), 123-132.

Rivers, S. E., Greenbaum, R.L., and Goldberg, E. (2001). Hospital-based adolescent substance abuse treatment: Comorbidity, outcomes and gender. *The Journal of Nervous and Mental Disease., 189*(4), 229-237.

Rivers, S. M., Greenbaum, R. L., & Goldberg, E. (2001). Hospital-based adolescent substance abuse treatment: comorbidity, outcomes, and gender. *Journal of Nervous & Mental Disease. 2001 Apr;189(4):229-37*.

Rounds-Bryant, J. L., Kristiansen,P.L., Fairbank,J.A. andHubbard,R.L. (1998). Substance use, mental disorders,and crime: Gender comparisons among a national sample of adolescent drug treatment clients. *Journal of Child and Adolescent Substance Abuse, 7*(4), 19-34.

Simpson, D. D. (1993). Drug Treatment Evaluation Research in the United States. [Article]. *Psychology of Addictive Behaviors, 7*(2), 120-128.

Simpson, D. D., Joe, G. W., & Brown, B. S. (1997). Treatment Retention and Follow-Up Outcomes in the Drug Abuse Treatment Outcome Study (DATOS). [Article]. *Psychology of Addictive Behaviors December 1997;11(4):294-307*.

Simpson, D. D., Joe, G.W., Fletcher, B.W. Hubbard, R.L. and Anglin, M.D. (1999). A national evaluation of treatment outcomes for cocaine dependence. *Archives of General Psychiatry, 56*(6), 507-514.

Smith, G. T., McCarthy,D.M. and Goldman,M.S. (1995). Self-reported drinking and alcohol problems among early adolescents: dimensionality and validity over 24 months. *Journal of Studies on Alcohol, 56*(4), 383-394.

Spicer, J. (1991). *Does you program measure up? An addiction professional's guide for evaluating treatment effectiveness.* Center City, Minnesota, U.S.A.

Stinchfield, R. D., Niforopulos, L., & Feder, S. H. (1994). Follow-up contact bias in adolescent substance abuse treatment outcome research. *Journal of Studies on Alcohol. 1994 May;55(3):285-9*.

Stout, R. L., Brown, P. J., Longabaugh, R., & Noel, N. (1996). Determinants of research follow-up participation in an alcohol treatment outcome trial. *Journal of Consulting & Clinical Psychology. 1996 Jun;64(3):614-8*.

Thurstin, A. H., Alfano,A.M., and Nerviano,V.J. (1987). The efficacy of AA attendance for aftercare of inpatient alcoholics:some follow up data. *Addictions, 22*(11), 1083-1090.

Times, F. M., andHolland,M.S. (1984). A treatment evaluation agenda:Discussion and recommendations, in Drug Abuse Treatment Evaluation:Strategies, progress and prospects. *NIDA Res Monogr, 51*, 167-174.

Vause, F. D. (1994). *Project demonstrating excellence: The Alberta Adolescent Recovery Centre: A treatment centre for chemically dependent youth and their families.* Unpublished PhD, The Union Institute, Cincinnati,Ohio.

Wilens, T. E., Spencer,T.J. and Biederman,J. (1995). Are attention-deficit hyperactivity disorders and the psychoactive substance use disorders really related? *Harvard Review of Psychiatry, 3*(3), 160-162.

Winters, K. C., Stinchfield, R. D., Opland, E., Weller, C., & Latimer, W. W. (2000). The effectiveness of the Minnesota Model approach in the treatment of adolescent drug abusers. *Addiction. 2000 Apr;95(4):601-12*.

Wise, B. K., Cuffe,S.P. and Fischer,T. (2001). Dual diagnosis and successful participation of adolescents in substance abuse treatment. *Journal of Substance Abuse Treatment., 21*(3), 161-165.