



Treatment Outcome of 600 Chemically Dependent Patients Treated in a Multimodal Inpatient Program Including Aversion Therapy and Pentothal Interviews

Journal of Substance Abuse Treatment, Vol. 10, pp. 359-369, 1993
Printed in the USA. All rights reserved.
Copyright © 1993 Pergamon Press Ltd.

James W. Smith, MD, and P. Joseph Frawley, MD
Schick Health Services, Seattle, Washington, and Schick Shadel Hospital, Santa Barbara, California

Abstract

A sample of 600 patients treated in a multimodal treatment program using aversion therapy and narcotherapy at three Schick freestanding addiction treatment hospitals and one Schick unit in a general hospital were followed-up. Contact was made a minimum of 12 months and as many as 20 months after completion of treatment (mean 14.7 mos.). Telephone contact was made by an independent research organization with 427 of the patients (71.2%). Of these, 65.1% were totally abstinent for 1 year after treatment and 60.2% were abstinent until follow-up a mean of 14.7 months later.

Fifty-two percent of the alcoholics were using or dependent on other drugs at admission. Seventy five of these treated for cocaine dependence and 47 treated for marijuana dependence. The cocaine 12 month and "total" abstinence (mean 14.7 most) rates for the 49 contacted patients were 83.7% and 81.6%, respectively. The marijuana 12 month and "total" abstinence (mean 14.7 most) rates for the 30 contacted patients was 70.0% for both groups. Abstinence rates for alcohol and/or other drugs were also calculated including non-contacted patients who had chart documented evidence of relapse.

The most powerful predictor of success was whether or not all urges to drink or use had been eliminated (presumably by aversion therapy). Of additional importance was the use of support groups and reinforcement treatments after completion of the initial hospitalization.

The two most prominent factors initiating a relapse were "intrapersonal determinants" such as stress from work or marriage/family relationships and "interpersonal determinants" such as being around others who were drinking/using or being at a celebration or special event. The two factors were of equal importance in the alcoholics. However, interpersonal determinants were far more important in the cocaine and marijuana treated patients.

Increased utilization of reinforcement treatments was associated with decreased urges to drink/use and increased abstinence rates. In contrast, increased frequency of support group utilization was associated with increased urges to drink/use and lower abstinence rates. This suggests the need to take seriously patient reports of "urges" in the first year after treatment and to carefully assess the cause and initiate or update an individualized plan of treatment. Such treatment may include increased reinforcement treatments, treatment of depression, and additional assistance in coping with intrapersonal and interpersonal determinants of relapse.

Keywords: aversion therapy; treatment outcome; pentothal interviews; alcoholism treatment; counter-conditioning

Introduction

The outcome study is the basic evaluative tool used to determine the effectiveness of therapeutic intervention in disease. The field of addiction medicine has been criticized for having too few such studies and the relatively poor quality of those that were carried out. The critics point out the anecdotal nature of many reports, the lack of

control groups, and the lack of blind procedures as being among the major deficiencies (Nathan & Skinstad, 1987; Sobell, Brochu, Sobell, Roy, & Stevens, 1987).

Some of these deficiencies are inherent in the nature of the treatment process. Other problems arise when one attempts to compare results from two or more treatment centers where the criteria for successful outcome is different (e.g., “controlled” drinking, versus abstinence from alcohol, versus abstinence from all potentially addictive drugs, versus abstinence from all mood altering drugs).

Despite these difficulties and inconsistencies, purchasers of health care are increasingly insistent that responsible treatment programs carry out periodic assessments of their treatment outcomes and make those results available to other professionals. Schick Shadel Hospitals have conducted outcome research since their founding in 1935. The early development and treatment team of Voegtlin and Lemere are widely quoted as among the first in the United States to publish such data (Voegtlin, 1940; Lemere & Voegtlin, 1940; Voegtlin, Lemere, & Broz, 1948). The present study is a continuation of that process and looks at the outcome of treatment at three Schick free-standing-addiction treatment hospitals and one Schick Addiction Treatment Unit in a general hospital.

Method

The objective was to determine the alcohol abstinence rate of patients treated for the first time at four Schick addiction treatment programs. The programs included the free-standing Schick addiction treatment hospitals in Seattle, WA, Santa Barbara, CA, and Fort Worth, TX, as well as the Schick addiction treatment unit at St. Mary Medical Center, Long Beach, CA. The results of providing treatment focused on marijuana and cocaine were also investigated.

It was determined that a sample of 200 patients would be selected from the two larger hospitals (Seattle with 63 beds and Fort Worth with 50 beds) while 100 patients would be selected from the Santa Barbara Hospital (30 beds) and the St. Mary Medical Center Unit (28 beds). This resulted in a sample of 600 patients who had completed at least the initial 10 days of alcoholism treatment between May and November of 1987. The total number of patients that met those criteria was 663. The cases were randomly selected by choosing 600 two-digit numbers from a table of random numbers and matching them to the last two digits of eligible patient case numbers. Cases matched in this manner were selected for follow-up. The sampling method insured that every patient meeting the selection criteria had an equal chance of being chosen for follow-up. No patient completing the initial 10 days of alcoholism treatment was included or excluded from the study for any reason other than chance. Each patient was telephoned by a trained interviewer employed by the independent research organization conducting the study (Facts Consolidated of Los Angeles, CA).

Each interviewer was first indoctrinated concerning the applicable statutes and policies concerning confidentiality as they apply to alcoholism and other drug treatment programs.

Patients were systematically telephoned until contact was made or until efforts to locate them by phone had been exhausted. Those contacted had a structured interview. In cases where further attempts to conduct the interview would cause a breach of confidentiality, the attempt was abandoned. Using this procedure, 427 patients were interviewed and 173 patients were not interviewed (71.2% personal contact rate).

A sample of 427, when selected in this manner, has a margin for statistical error of 4.84% at the 0.95 confidence level. That is, the chances are 95 out of 100 that the results would not differ more than 4.84% in either direction from the results that would have been obtained if the survey were to be repeated with a similar sample of 1987 patients treated in the same time period.

The procedure also called for a verification interview to be carried out with a significant other in approximately 40% of cases. One hundred seventy-nine (42%) of contacted cases had such an interview. In only one case did the significant other disagree with the patient. In that case the outcome results were amended to coincide with the

verification interview (non-abstinence). In those cases where the patient indicated total abstinence through the 12-month mark but later relapsed, 100% of the reports were verified. Only substantiated cases were included in the 12-month abstinence category.

In order to complete the 427 telephone interviews with patients and to verify the responses with 179 “significant others,” over 5,800 telephone calls were made. In cases where patients could not be readily located, exhaustive attempts were made to determine their whereabouts before it was decided to classify them as non-contacts. Known relatives, friends, business and work associates were contacted in order to locate the individuals. At all times, care was taken to insure that confidentiality was maintained.

The charts of the non-contacted 173 patients were reviewed. The chart documented status of this group was then determined. Those with a chart documented relapse on alcohol or other drug for which they received treatment were included in the relapse group.

This procedure allowed us to look at the data three ways: (a) Analysis of the data of the 427 contacted patients (71% follow-up); (b) analysis of the data on the 427 contacted patients plus the non-contacted patients with chart documented relapse (n = 40) for a total of 467 (77.8% follow-up); (c) analysis of all 600 patients (100% follow-up).

The outcome survey was conducted from November, 1988 through March, 1989. At least 12 months, and as many as 20 months had elapsed since treatment was completed (mean 14.7 months).

The Treatment Program

The alcoholism treatment program of Schick Shadel Hospital is described in more detail elsewhere (Smith, 1982). Briefly, it consists of:

1. A detailed medical evaluation (including laboratory studies).
2. Medical detoxification for those who require it (approximately 50%).
3. Counseling (group and individual) for the patient and significant others. Patients also receive a detailed psychosocial evaluation and a psychological evaluation.
4. Education on the addiction and recovery process for the patient and significant others.
5. A family program (individual and group).
6. Development of an aftercare plan with the patient and significant others (2-year plan).
7. Aversive counter conditioning designed to make the sight, smell, taste and thought of alcoholic beverages unpalatable (Voegtlin, 1940; Cannon & Baker, 1981; Smith, 1982). The majority of alcoholic patients receive chemical aversion therapy during which emetine induced nausea is paired with the sight, smell and taste of a variety of alcoholic beverages in order to achieve the treatment goal (Voegtlin, 1940; Cannon & Baker, 1981; Smith, 1982). As an alternative, for patients who are medically unsuitable for the more strenuous treatment, faradic aversion therapy is used. In this technique an aversive level of electrical stimulus to the forearm is paired with the sight, smell and taste of the alcoholic beverages (Smith, 1982).
8. Narcotherapy (“Pentothal interview”) designed to gather psychological diagnostic information in a short period of time and also to monitor the development of aversion to the various alcoholic beverages by asking about the level of desire for each type of beverage during each interview (Smith, Lemere, & Dunn, 1971).
9. Introduction to follow-up support activities such as 12-step programs, hospital-based support groups and others.

The treatment program for the average patient is carried out during 10 days of hospitalization (post detoxification) during which the patient receives 5 aversion treatments and 5 narcotherapy treatments. These two forms of

treatment are given on alternate days (e.g., day one an aversion treatment, day two a narcotherapy treatment). The counseling and educational components of the program are carried out daily. Following the initial 10 days of treatment the patients return home. They then return to the hospital for 2 two-day “reinforcement treatments,” usually at approximately 30 days and 90 days following their initial discharge. These two-day hospitalizations include one aversion treatment and one narcotherapy treatment, again on an alternate day basis. In addition, counseling and aftercare plan modification is carried out. The goal of this treatment program is to assist patients to regain control of their lives through permanent abstinence from alcohol and other addictive drugs.

Schick also offers treatment for addictions other than alcohol. Patients who were addicted to cocaine, methamphetamine or marijuana, in addition to alcohol, were eligible to receive aversion therapy for those specific drugs in addition to alcohol aversion. The addition of these treatments extended the length of stay by 1-6 days. For stimulants, a “cocaine or amphetamine substitute” was paired with an aversive stimulus in 5 treatment sessions in addition to the alcohol aversion treatments (Frawley & Smith, 1990). For marijuana, a “marijuana substitute” was paired with the aversive stimulus in addition to the alcohol aversion treatments (Smith, Schmeling, & Knowles, 1988). Drug specific education and counseling was given in addition to that routinely given for alcoholism treatment.

Subjects

Those selected for interview were drawn from the universe of patients who completed, for the first time, at least the first 10 day (post-detoxification) increment of the inpatient alcoholism treatment program at the four Schick treatment programs noted above. They completed treatment between May and November 1987.

Approximately 10% of the patients admitted during that period left treatment prior to completing the initial 10-day treatment. These patients were not candidates for inclusion into this study. Four patients were deceased and 19 refused to be interviewed. These cases were categorized as non-contacted.

The demographics of Schick Shadel Hospital patients have been described elsewhere (Knowles, Smith, & Lemere, 1983). Demographic details of the subjects in the present study are shown in Table 1. In general, they resemble typical patients in other inpatient treatment programs for medically non-indigent persons (Wiens & Menustik, 1983). The majority were males (78.5%) between the ages of 25 and 49 (76.6%), were married (52.7%) and employed (78%). All subjects met the DSM-III-R criteria for alcohol dependence. History of other drug use at the time of admission was also obtained. Over half (52.5%) of the patients were using one or more drugs other than alcohol at the time of admission. The two drugs used more frequently were marijuana (25.0%) and cocaine (14.7%). In many cases the same patient used both drugs. Benzodiazepines were the third most popular drugs (10.7%). The use of barbiturates (6.0%) and opiates (5.8%) were about equal. Alcohol use alone was reported by 47.5% of the patients while 26.7% used one other drug, 17.8% used two and 8% used three or more other drugs.

Prior to their treatment at Schick, 30% of the patients reported having received alcoholism treatment. Of these, 49.2% reported treatment in a hospital-based program while the majority of the others reported they attended Alcoholics Anonymous [AA] (38%). The remainder used other outpatient approaches involving professional counseling. Few (8.6%) reported seeking outpatient treatment with a physician.

In most important respects the non-contacted group and contacted group were indistinguishable. There were no differences in the percent treated at each hospital, in the ratio of males to females, mean age, type of drug other than alcohol preferred, longest pretreatment period of sobriety, length of time alcohol was a problem, percent of cases with family involvement in treatment, percent treated with each type of aversion, percent who arrived for treatment with a urine test positive for drugs, percent treated for dependence on drugs in addition to alcohol.

There was a difference in those using the first and second reinforcement treatment. In the contacted group 88.1% used the first reinforcement treatment and 66.3 % used the second. In the non-contacted group 69.9% used the first reinforcement treatment and 34.7% used the second. There were also more chart documented relapses in the non-contacted group (27.7%) compared to the contacted group (19.2%).

TABLE 1 - Demographics

Variable	Number	Percent
Sex		
Male	471	78.5
Female	129	21.5
Age		
Mean	37	
Median	35	
Standard deviation	11.6	
Marital status		
Never married	110	18.3
Married	316	52.7
Divorced/separated	161	26.8
Widowed	13	2.2
Employment status		
Employed	403	67.2
Self employed	65	10.8
Retired	41	6.8
Housewife	29	4.8
Student	6	1.0
Unemployed	49	8.2
Disabled	7	1.2
Ethnicity		
Caucasian	515	85.8
Black	39	6.5
Hispanic	35	5.8
Native American	10	1.7
Asian	1	0.2

Results

Of the 600 patients selected for the study, 427 were contacted during the survey. The minimum elapsed time since treatment was 12 months and the maximum was 20 months (mean 14.7 months). Information was obtained from these patients with validating information from a significant other in 42% of cases.

The information included: (a) Continuous alcohol and other drug abstinence (except that prescribed by a physician) over the first 12 months since treatment (12-month abstinence); (b) continuous alcohol and other drug abstinence (except that prescribed by a physician) over the entire span of time since treatment (total abstinence).

Of the 173 patients classified as non-contacted, 4 were deceased and 19 refused to be interviewed. Chart review of these 173 patients revealed that 40 (23.1%) were known to have relapsed (“chart documented relapse group”). The remaining 133 had no evidence of relapse documented in their charts.

Contacted Group

The contacted group (n = 427) comprised 71.2% of the 600 individuals selected for follow-up. They had a 12-month alcohol abstinence rate of 65.1% and a total abstinence rate (12-20 months; mean = 14.7 months) of 60.2%. An additional 7.7% had alcohol on one occasion (either accidentally or deliberately) but none since then.

In addition, 7.4% drank more than once but had remained abstinent for 6 months or longer at follow-up. A similar group of 4.9% drank but were abstinent at follow-up for less than 6 months and 20.8% were still drinking.

The 111 patients who reported abusing cocaine prior to treatment, reported a 12-month alcohol abstinence rate of 60.4% and a total abstinence rate of 55.9%. An additional 13 (11.7%) drank on one occasion only and 10 (9.0%) drank more than once but had remained abstinent for 6 months or longer at follow-up. Twenty-two (19.8%) were still drinking.

Of the 130 patients who reported abusing marijuana prior to treatment, the 12-month alcohol abstinence rate was 62.3% and the total abstinence rate was 56.9%. An additional 11 (8.5%) drank 1 day or less, and another 11 (8.5%) drank for more than 1 day but had remained abstinent for 6 months or longer at follow-up. Thirty-one (23.8%) were still drinking.

Of the 213 patients who reported alcohol as their only drug problem, the 12-month abstinence rate was 69.0% and the total abstinence rate was 65.3%. An additional 14 (6.6%) drank 1 day or less, while 12 (5.6%) drank for more than 1 day but had been abstinent for 6 months or longer at follow-up. Thirty-five (16.4%) were still drinking.

Contacted Plus Chart Documented Relapse Group

The group composed of contacted patients (n = 427) and those with chart documented relapses (n = 40) comprised 77.8% (n = 467) of the total group (n = 600). They had a 12-month alcohol abstinence rate of 59.5% and a total abstinence rate (12-20 months; mean = 14.7 months) of 55.0%. An additional 33 (7.1%) had alcohol on one occasion only and 27 (5.8%) drank more than once but had remained abstinent for 6 months or longer at follow-up. A similar group of 21 (4.5%) drank more than once but were abstinent at follow-up for less than 6 months and 129 (27.6%) were still drinking.

The 128 patients who admitted abusing cocaine prior to treatment reported a 12-month alcohol abstinence rate of 52.3% and a total abstinence rate of 48.4%. An additional 13 (10.2%) drank for 1 day or less while 10 (7.8%) drank for more than 1 day but had been abstinent for 6 months or longer at follow-up. Thirty-nine (30.5%) were still drinking.

The 144 patients who reported abusing marijuana prior to treatment reported a 56.3% 12-month alcohol abstinence rate and a 51.4% total abstinence rate. Eleven (7.6%) drank 1 day or less and another 11 (7.6%) drank for more than 1 day but had remained abstinent for 6 months or longer at follow-up. Forty-five (31.3%) were still drinking.

The 227 patients who had no other drug problem in addition to alcohol dependence had a 12-month alcohol abstinence rate of 64.8% and a total abstinence rate of 61.2% while 14 (6.2%) drank for 1 day or less and 12 (5.3%) drank for more than 1 day but had remained abstinent for 6 months or longer at follow-up. Forty-nine (21.6%) were still drinking.

Total Sample

The total group of 600 individuals (100% sample) had a 12-month alcohol abstinence rate of 68.5% and a total abstinence rate (12-20 months; mean = 14.7 months) of 65.0%. An additional 33 (5.5%) drank on one occasion only and 27 (4.5%) drank more than once but had remained abstinent for 6 months or longer at follow-up while 21 (3.5%) drank and were abstinent for less than 6 months at follow-up and 129 (21.5%) were still drinking.

The 174 patients who admitted cocaine abuse prior to treatment reported a 12-month alcohol abstinence rate of 64.9% and a total abstinence rate of 62.1% while 13 (7.5%) drank for 1 day or less. Ten (5.7%) drank for more than 1 day but had remained abstinent for 6 months or longer at follow-up. Thirty-nine (22.4%) were still drinking.

The 197 patients who admitted abusing marijuana prior to treatment reported a 12-month alcohol abstinence rate

of 68.0% and a total abstinence rate of 64.5% while 11 (5.6%) drank for 1 day or less and another 11 (5.6%) drank for more than 1 day but had remained abstinent for 6 months or longer at follow-up. Forty-five (22.8%) were still drinking.

The 285 patients who had no other drug problems except alcohol dependence had a 12-month alcohol abstinence rate of 71.9% and a total abstinence rate of 69.1% while 14 (4.9%) drank 1 day or less and 12 (4.2%) drank for more than 1 day but had remained abstinent for 6 months or longer at follow-up. Forty-nine (17.2%) were still drinking.

Other Drug Dependence Treated

Some, but not all, of the patients who admitted to abusing drugs other than alcohol agreed to receive aversion therapy for those drugs as well as for alcohol. Seventy-five of these treated for their cocaine dependence (47 treated for cocaine and alcohol while 28 treated for cocaine, alcohol and marijuana). Forty-seven treated for marijuana dependence (19 for marijuana and alcohol and 28 for marijuana, alcohol and cocaine).

Cocaine Contacted Group

In the cocaine treated group, 49 patients were contacted (65.3%). Their 12-month cocaine abstinence rate was 83.7% and their total abstinence rate was 81.6%. Two (4.1%) used once and 3 (6.1 %) used more than once but had remained abstinent for 6 months or longer at follow-up. Four (8.2%) were still using.

Contacted Plus Chart Documented Relapse Group

In the contacted (n = 49) plus non-contacted but chart documented relapse (n = 5) group (Total n = 54), the 12-month cocaine abstinence rate was 77.8% and the total abstinence rate was 75.9%. Two (3.7%) used once and three (5.6%) used more than once but had remained abstinent for 6 months or longer at follow-up and 8 (14.8%) were still using.

Total Sample

The total group of cocaine treated patients (n = 75) had a 12-month cocaine abstinence rate of 76.0% and a total abstinence rate of 74.7%. Two (2.7%) used once and 3 (4.0%) used more than once but had remained abstinent for 6 months or more at follow-up. Fourteen (18.7%) were still using.

Marijuana

A total of 47 patients received aversion therapy for marijuana as well as alcohol. Nineteen (40.4%) treated for alcohol and marijuana and 28 (59.6%) treated for alcohol, marijuana and cocaine.

In the contacted group (n = 30) the 12-month marijuana abstinence rate was 70.0% and the total abstinence rate was 70.0%. One patient (3.3%) used 1 day or less and 5 (16.7%) used for more than 1 day but had remained abstinent for 6 months or more at follow-up. One (3.3%) was still using.

Marijuana Contacted Plus Chart Documented Relapse Group

In the contacted (n = 30) plus chart documented relapse (n = 3) group (Total n = 33) the 12-month marijuana abstinence rate was 72.7% and total abstinence rate was also 72.7%. One patient (3.0%) used for 1 day or less and 5 (15.2%) used for more than 1 day but had remained abstinent for 6 months or more at follow-up. One (3.0%) was still using.

Total Sample

In the total group (n = 47) the 12-month marijuana abstinence rate was 72.3% and the total abstinence rate was also 72.3%. One patient (2.1%) used for 1 day or less and 5 (10.6%) used for more than 1 day but had remained abstinent for 6 months or more at follow-up. One (2.1%) was still using.

TABLE 2 - Alcohol Abstinence for Each Type of Aversion Treatment Used

	Abstinent	Non-abstinent
Contacted group (n = 427)		
Chemical (n = 367)	217 (59.1%)	150 (40.9%)
Faradic (n = 46)	29 (63.0%)	17 (37.0%)
Both (n = 14)*	11 (78.6%)	3 (21.4%)
Contacted plus chart documented relapsed (n = 467)		
Chemical (n = 398)	217 (54.5%)	181 (45.5%)
Faradic (n = 52)	29 (55.8%)	23 (44.2%)
Both (n = 17)*	11 (64.7%)	6 (35.3%)
Total sample (n = 600)		
Chemical (n = 512)	331 (64.6%)	181 (35.4%)
Faradic (n = 67)	44 (65.7%)	23 (34.3%)
Both (n = 21)*	15 (71.4%)	6 (28.6%)

*Patients included in the "Both" category started with chemical aversion therapy but were switched to faradic therapy for a variety of clinical or psychological reasons.

TABLE 3 - Total Abstinence from Alcohol by Reinforcement Utilization

Number of Reinforcements	Number of Patients	Percent Abstinent
0	51	29.4
1	93	50.5
2	273	68.5
>2	10	80.0

Type of Aversion Treatment Used

There were no differences in alcohol abstinence when analyzed by the type of aversion (chemical or faradic or both) utilized (Table 2). Similar criteria were used for selecting patients for each type of aversion treatments as reported by Jackson and Smith (1978). The patients who received the two forms of treatment are described in Table 3. The patients receiving faradic aversion for their alcoholism treatment were older, less likely to be employed and less likely to be using other drugs than the patients who received chemical aversion therapy. However, even in the patients treating only for alcohol there is no difference in the alcohol abstinence rates for chemical or faradic aversion.

Reinforcement Treatments

A powerful predictor of long-term abstinence was whether or not the patient completed both reinforcement treatments. Table 3 shows "total abstinence" rates (mean = 14.7 mo.) for contacted patients who took only the initial 10-day treatment program and those who took one, two or more than two reinforcement treatments. There is a progressive increase in abstinence with increasing numbers of reinforcement treatments.

Support Groups

At least some degree of support group attendance after completion of the initial inpatient treatment program is also associated with increased abstinence rates from alcohol and other drugs for which the patient received treatment. Slightly more contacted patients (118) attended AA than attended Schick-sponsored groups (106). A small number (29) used church-sponsored groups. Nearly half (195) attended no groups. The total abstinence rates for the church groups (72.4%) and Schick groups (69.8%) were somewhat higher than the AA groups (61.0%). Those who attended no abstinence support groups had the lowest abstinence rate (48.7%). A small number used professional counseling or other group counseling. Together they consisted of 32 patients and had an abstinence rate of 68.8%.

TABLE 4 - Effect of Reinforcement Utilization and/or Support Utilization

Condition	1	2	3	4
Reinforcements	<2	<2	≥2	≥2
Support	No	Yes	No	Yes
Number	79	65	116	167
Total abstinence (%)	34.2	52.3	58.6	74.3

p value (Chi sq. 1 df with Yates correction)	1 vs 2	3 vs 4	2 vs 3	1 vs 4	1 vs 3	2 vs 4
	NS	.01	NS	<.001	.01	.01

TABLE 5 - Total Abstinence from Alcohol by Level of “Urge Reduction” (contacted group; N = 427)

Urges to Drink	Number of Patients	Percent Abstinent	Percent Relapsed
Lost all urges	165	89.7	10.3
Lost uncontrollable urges	183	56.8	43.2
Still have urges	79	6.3	93.7

The total number of patients classified in the support group categories noted above adds up to more than the 427 contacted patients because 57 of them used more than one category of support in such a manner that it was not possible to determine their “principal support.” The use of any support (n = 232) vs. no support (n = 195) is associated with a total abstinence rate of 68.1% vs. 48.7% (p < .001), respectively.

Reinforcement treatment did not substitute for support groups and vice versa. Table 4 shows that those who used neither support nor both reinforcements had a total abstinence rate for all treated chemicals of 37.5%. Those who utilized support but less than 2 reinforcements had a total abstinence rate of 52.3%. Those who utilized both reinforcements but no support had an abstinence rate of 58.6%. Those who used support and both reinforcements had an abstinence rate of 74.3%.

By far the most powerful predictor of abstinence from alcohol and other drugs was whether or not the treatment resulted in elimination of craving or “urges to drink/use.” Patients were asked to respond with one of three answers to the question “Did treatment help you lose the urge to drink/use?” The choices were:

1. “Yes, lost all urges.”
2. “Yes, lost all uncontrollable urges.”
3. “No, still have urges.”

Table 5 shows total abstinence rates for alcohol in contacted patients in each category of “urge reduction” following treatment. The vast majority of those who report that treatment helped them lose all urges remained abstinent (89.7%). In contrast, the vast majority of those who reported that treatment had not helped them lose the urges relapsed (93.7%). The group that reported absence of all “uncontrollable urges” (although they still experience some urges) had an intermediate abstinence rate (56.8%).

Aversion therapy was intended to eliminate the urges to use alcohol or other drugs. It was assumed that support groups would have little if any effect on these urges. Instead, they would be more important in keeping motivation and attitude focused on abstinence and a non-chemical reward system, decreasing exposure to people who would influence the recovering person to use, as well as assisting them in dealing with life stresses and other ongoing recovery issues. This assumption was largely supported by two pieces of data. Table 6 shows there was no association between utilization of support groups during the period of being at risk for relapse and experiencing

TABLE 6 - Utilization of Support Groups vs. Reinforcements

Support and Urges			Reinforcements and Urges		
Support Type	#	% with Urge	Reinforcements	#	% with Urge
AA	118	54.2	0	51	76.5
Schick	103	56.3	1	93	54.8
Church	29	55.2	2	283	49.8
None	195	53.5	Chi square	(2df)	(p < 0.01)
Any Support	232	54.6			

"Urges" includes all patients who reported any urges.

TABLE 7 - Influence of Support Group on Urges

Frequency of Support Group Attendance	> 1/wk	1/wk	< 1/wk
AA (No. patients)	39	27	52
% with urges	64	51.9	48
Schick (No. patients)	11	51	41
% with urges	63.6	61.0	43.9

TABLE 8 -Patients with Urges

Frequency of Support Group Attendance	> 1/wk	1/wk	< 1/wk	p Value (Chi sq. 2 df)
AA (No. patients)	25	17	29	
% Total abstinence	20	35	66	.01
Schick (No. patients)	8	30	24	
% Total abstinence	38	50	63	NS

urges. However, there was an association between the use of reinforcements and the loss of urges ($p < .01$).

There was a non-significant trend for increased frequency of support group utilization to be associated with a higher percentage of patients experiencing urges post treatment. (Table 7).

In those patients with urges, increased frequency of support group utilization tended to be negatively correlated with abstinence (Table 8).

Determinants of Relapse

In questioning the relapsed members of the contacted group, a familiar pattern of precipitating factors was found. Nearly half (49.4%) of those who drank did so for 1 of 2 reasons: (a) "*Intrapersonal* determinants of relapse" associated with "stress" from work (9.4%) or marriage/family relationships (17.6%); (b) "*interpersonal* determinants of relapse" associated with being around others who were drinking (10.6%) or at a celebration or special event (11.8%).

Intrapersonal and interpersonal factors were almost equally reported as a factor in relapse to alcohol use. These findings are almost identical to those reported by Marlatt and Gordon (1980).

Relapse to the use of cocaine or marijuana shows this trend even more strongly. Nearly 3 out of 4 (72.9%) who relapsed did so in association with these two factors. Interpersonal factors were the most powerful in inducing relapse. Being around others who were using or pressuring the patient to use was reported as the principle cause for relapse in 34.9% of cases and participation in a celebration or special event in 19% of cases. Intrapersonal factors were not as important in cocaine/marijuana relapse as in alcohol relapse. Marital/family relationship stress accounted for only 11.1% of relapses and work-related stress accounted for still fewer (7.9%).

Discussion

Although authorities in the field of alcoholism treatment are not unanimous in choosing total abstinence from alcohol and other drugs as the ultimate goal (Nathan & Skinstad, 1987), abstinence has been the traditional goal of the Schick Shadel program since its beginning in 1935. The authors readily agree that an enhanced quality of all aspects of life for the patient and family is the ultimate goal. However, it is our opinion that this goal is most often reached by alcoholics and other drug dependent persons after they become abstinent. Babor, Dolinsky, Rounsaville, and Jaffe (1988) showed a clear linear relationship between the level of alcohol consumption post-treatment and failure to improve in medical status, biological function and psychopathology. Emrick (1974) reviewed 110 studies and found over two-thirds of the outcome criteria improved as abstinence was achieved. In attempting to assess successful treatment outcome, the end point of total abstinence is also much more easily measured and agreed upon than more subjective measures such as “controlled drinking” or “enhanced quality of life.”

Abstinence status at a minimum of 1 year post-treatment was chosen as an assessment point simply because a majority of other outcome studies report results at this time, and it therefore makes comparison of results more convenient even though cogent arguments can be, and have been, made for assessing outcome at shorter or longer intervals (Costello, 1975a, 1975b; Emrick, 1975). Because of the high degree of mobility of people in the United States where nearly 1 person out of 5 moves each year (U.S. Bureau of Census, 1986), it becomes extraordinarily difficult to locate persons after 2, 3 or more years. Therefore, 1 year data seems to be a reasonable compromise between the practical mechanics involved in conducting outcome studies and allowing enough time to pass following treatment so that patients can demonstrate reasonable ability to live without alcohol or other drugs. In addition, as time from treatment increases, more and more post-treatment factors may influence outcome.

The issue of relying on patient self-report of abstinence status has also been debated (Babor, Stephens, & Marlatt, 1987; Fuller, 1988; Watson, Tilleskjaer, Hoodecheck-Schow, Pucel, & Jacobs, 1984; Maisto & O'Farrell, 1985; Watson, 1985). A number of researchers have concluded that, so long as reports of drinking or other drug use do not lead to unwanted consequences to the patient, self-reports of total abstinence are accurate (Sobell & Sobell, 1974; Sobell, Maisto, Sobell, & Cooper, 1979; Babor, Stephens, & Marlatt, 1987). Some emphasize that self-reports on categorical measures such as abstinence vs. non-abstinence are more accurate than self-reports on frequency and amounts consumed by those who are not abstinent (Sobell, Sobell, & Vanderspek, 1979). Our own experience is consistent with both positions. As a validity check in the present study, 42% of patients had their abstinence assessment compared to the assessment of a significant other. In only one case was there a disagreement. Therefore, our results confirm the above-noted studies and indicate that self-report is sufficiently valid so that it represents a practical way of assessing abstinence rates following treatment.

The fact that only 10% of patients left treatment before completing the initial 10 days (post-detoxification) of treatment suggests that, despite the use of aversion therapy, patient acceptance of the treatment program was extremely high. Other treatment programs not using aversion therapy report premature discharge rates of 7% (Gilmore, 1985) to 21% (Patton, 1979).

The goal of successfully achieving 12 months of continuous abstinence from alcohol was achieved by the majority of patients. Of the contacted group, 65.1% were successful. Even the addition of those non-contacted patients whose chart documented a relapse to the population evaluated (contacted plus chart-documented relapse) there was still a 12-month abstinence rate of 59.5%.

The alcohol abstinence rates found in this study do not differ substantially from those reported previously (Smith, 1966; Jackson & Smith, 1978; Smith & Frawley, 1990), even those reported in the very early days of this treatment program (Voegtlin, 1940). This is somewhat surprising since there were so few “pure” alcoholics in the group (52.5% used or were dependent on other drugs at the time of admission) and the mean age (37) is younger than that of Schick patients reported in earlier studies (mean slightly over 43 years) (Knowles, Smith, & Lemere,

1983). Both factors (use of other drugs and younger age) are reported to be associated with lower long-term abstinence rates (Harrison & Hoffman, 1986; Cordill & Associates, 1988; Hoffman & Harrison, 1987; Blaney, Radford, & MacKenzie, 1975; Wiens & Menustik, 1983; Patton, 1979; Borthwick, 1977). These abstinence rates compare favorably with those reported from other programs that are based primarily on counseling and group therapy. Typical 1-year abstinence rates in patients from private treatment programs range from 31.9% to 59% (McLachlan, 1974; Freedberg & Johnston, 1981; Pettinati, Sugerma, DiDonato, & Maurer, 1982; Glatt & Lepzig, 1955; Gilmore, 1985).

The additional use of aversion treatment as part of a comprehensive multimodal treatment approach for cocaine and marijuana dependence in alcoholic patients is a relatively new approach in the treatment field. It is gratifying to see that it is associated with such favorable results in patients who received aversion treatment for a drug of dependence. In patients who received aversion treatment for a drug of dependency (in addition to alcohol), the 1-year total abstinence rate for those contacted by phone and adding those whose chart showed a relapse is 77.8% for cocaine, 72.7% for marijuana and 47.1% for all non-prescribed mood altering drugs. The current abstinence rates (total abstinence plus abstinence at least 6 months prior to the follow-up at 14.7 months) are 85.2% for cocaine and 90.9% for marijuana. These results are favorable when compared to other programs who have measured abstinence from cocaine or marijuana (Rawson, Obert, McCann, & Mann, 1986).

The most powerful predictor of abstinence is whether or not the patient lost the "craving" or "urge" to drink or use. There is now ample evidence that subjective "craving" and positive expectations from alcohol correlate with increased autonomic arousal, increased salivation and increased levels of dependence (Kaplan, Meyer, & Stroebel, 1983; Cooney, Baker, Pomerleau, & Josephy, 1984). Moreover, higher scores on the results of the Alcohol Expectancy Questionnaire have been associated with increased risk for relapse and greater dependence on alcohol (Brown, Goldman, & Christiansen, 1985; Brown, 1985). At the same time, the level of conditioned change in heart rate response to the presentation of alcohol following aversion treatment has been associated with duration of abstinence following treatment (Cannon, Baker, Gino, & Nathan, 1986). Patients treated in this program with aversion reported that 38.6% had lost all urge to drink/use, 42.9% had lost all the uncontrollable urges and only 18.5% reported that treatment had not resulted in the loss of urges.

There is extensive information in the literature to support the effectiveness of consummatory aversion decreasing the ingestion of a particular substance (Elkins, 1989; Howard, Rimmel, Jensen, Smith, & Frawley, in press). It could be argued that patients who take all parts of the prescribed treatment are more compliant and could therefore be expected to do better under any circumstances. This point cannot be completely ignored; however, the very close correlation between the number of reinforcement treatments and "loss of all urges" and abstinence strongly suggests that aversion rather than compliance is the key factor, especially since increasing the frequency of support group meetings was not associated with a reduction of urges or improved abstinence.

Support groups make a separate (and additive) contribution to long-term abstinence. Again, the question of compliance versus therapeutic effect of the modality cannot be completely answered. There is relatively strong covariance between use of support groups and completion of both prescribed aversion treatments. However, support groups with no reinforcements are associated with slightly higher abstinence rates than no support groups and no reinforcements although this difference does not reach statistical significance. Those who take both reinforcement treatments but do not attend support groups are also intermediate in their outcome. By far the best results are seen in patients who take both reinforcements and attend support groups. The findings demonstrated the compatibility and value of aversion conditioning approaches combined with support groups (including "12-step" groups) in achieving long-term abstinence from drugs of dependence. It should be emphasized, however, that support group attendance does not compensate for the detrimental effect of continuing to experience urges. Indeed, in those patients experiencing urges, relapse rates tend to increase as frequency of support group attendance increases. This calls into serious question the commonly given advice to attend support groups on a daily basis if urges to drink/use become strong. Instead, this finding suggests that the urges should be addressed in a different

way. Perhaps by more aversion therapy or by one of the pharmacological approaches to urge reduction (e.g., amantadine, clonidine or carbamazepine).

The final striking finding in this study is the powerful effect of environmental factors on relapse, particularly in the case of cocaine and/or marijuana dependent patients. It is well known that these environmental factors (“interpersonal determinants of relapse”) are important in alcoholism treatment (Marlatt & Gordon, 1980). However, it is less well known that cocaine and marijuana dependent persons who relapse are nearly twice as likely as alcoholic patients to do so because of these environmental (“interpersonal”) factors. This suggests possible productive areas for further research (e.g., to determine if conditioned cues to use other drugs are stronger than conditioned cues to drink). It also highlights the importance of carefully evaluating each patients’ environment so that potential hazards can be anticipated and dealt with in the aftercare plan. It also emphasizes the need for integrating training in coping strategies into the basic treatment program.

Conclusions

Long-term abstinence from alcohol, cocaine and marijuana is obtained in the majority of patients participating in a multimodal addiction treatment program utilizing aversion therapy and narcotherapy in addition to education and counseling. Post-treatment support group attendance and reinforcement treatment utilization independently enhance success. Intrapersonal and interpersonal factors are major determinants of relapse. In alcoholics they have equal importance; in cocaine and marijuana dependent patients, the interpersonal factors are of greater importance.

The most powerful predictor of long-term abstinence is whether or not the “craving” or “urges” to drink/use have been eliminated (presumably by the aversion therapy). The inclusion of aversion therapy and narcotherapy into a multimodal addiction treatment program does not conflict with other elements of treatment including education, individual or group counseling, coping skills training, relapse prevention training, 12-step program activities or other commonly used treatment components.

References

- Babor, T. F., Dolinsky, Z., Rounsaville, S., & Jaffe, J. (1988). Unitary versus multidimensional models of alcoholism treatment outcome: An empirical study. *Journal of Studies on Alcohol*, 49(2), 167-177.
- Babor, T. F., Stephens, R.S., & Marlatt, G.A. (1987). Verbal report methods in clinical research on alcoholism: Response bias and its minimization. *Journal of Studies on Alcohol*, 48(5), 410-424.
- Blaney, R., Radford, I. S., & MacKenzie, G. (1975). A Belfast study of the prediction of outcome in the Treatment of alcohol. *British Journal of Addiction*, 70, 41-50.
- Borthwick, R. (1977). *Summary cost-benefit study results for Navy alcoholism rehabilitation programs*. Arlington, VA: Presearch Inc.
- Brown, S. A. (1985). Reinforcement expectancies and alcoholism treatment outcome after a one-year follow-up. *Journal of Studies on Alcohol*, 46(4), 304-308.
- Brown, S. A., Goldman, M.S., & Christiansen, B.A. (1985). Do alcohol expectancies mediate drinking patterns of adults? *Journal of Consulting and Clinical Psychology*, 53(4), 512-519.
- Cannon, D.S., & Baker, T. B. (1981). Emetic and electric shock aversion therapy: Assessment of conditioning. *Journal of Consulting and Clinical Psychology*, 49(1), 20-33.
- Cannon, D.S., Baker, T. B., Gino, A., & Nathan, P.E. (1986). Alcohol-aversion therapy: Relation between strength of aversion and avoidance. *Journal of Consulting and Clinical Psychology*, 54(60), 825-830.
- Cannon, D.S., Baker, T. B., & Wohl, C. K. (1981). Emetic and electric shock alcohol aversion therapy; six-

and twelve-month follow-up. *Journal of Consulting and Clinical Psychology*, 49(3), 360-368.

- Cooney, N. L., Baker, L. H., Pomerleau, O. F., & Josephy, B. (1984). Salivation to drinking cues in alcohol abusers: Toward the validation of a physiological measure of craving. *Addictive Behaviors*, 9, 91-94.
- Cordill & Associates. (1988). Care unit: Evaluation of treatment outcome. Newport Beach, CA: Comprehensive Care Corporation.
- Costello, R. M. (1975a). Alcoholism treatment and evaluation: In search of methods. *International Journal of the Addictions*, 10(2), 251-275.
- Costello, R. M. (1975b). Alcoholism treatment and evaluation: In search of methods. 11. Collation of two-year follow-up studies. *International Journal of the Addictions*, 10(5), 857-867.
- Elkins, R. L. (1989). An appraisal of chemical-aversion (emetic therapy) approaches to alcoholism treatment. Augusta, GA: Veterans Administration Medical Center.
- Emrick, C.D. (1974). A review of psychologically oriented treatment of alcoholism: 1. The use and interrelationships of outcome criteria and drinking behavior following treatment. *Quarterly Journal of Studies on Alcohol*, 35, 523-549.
- Emrick, C.D. (1975). A review of psychologically oriented treatment of alcoholism: 11. The relative effectiveness of different treatment approaches and the effectiveness of treatment versus no treatment. *Journal of Studies on Alcohol*, 36(1), 88-99.
- Frawley, P. J., & Smith, J.W. (1990). Chemical aversion therapy in the treatment of cocaine dependence as part of a multimodal treatment program: Treatment outcome. *Journal of Substance Abuse Treatment*, 7, 21-29.
- Freedberg, E., & Johnston, W. (1981). Effects of assertion training within context of multimodal alcoholism treatment program for employed alcoholics. *Psychological Reports*, 48, 379-386.
- Fuller, R.K. (1988). Can treatment outcome research rely on alcoholics' self-reports? *Alcohol, Health and Research World*, 12(3), 181-186.
- Gilmore, K. (1985). Hazelden Primary Residential Treatment Program: 1983 profile and patient outcome. Center City, MN: Hazelden Foundation.
- Glatt, M., & Lepzig, M. (1955). Treatment center for alcoholics in a mental hospital. *Lancet*, 1, 1318-1320.
- Harrison, P.A., & Hoffman, N. G. (1986). Chemical dependency inpatients and outpatients: Intake characteristics and treatment outcome, chemical dependency program. Minneapolis, MN: St. Paul-Ramsey Foundation.
- Hoffman, M. G., & Harrison, P.A. (1987). CATOR 1986 Report: Findings two years after treatment. St. Paul, MN: Chemical Abuse/Addiction Treatment Outcome Registry.
- Howard, M. O., Rimmel, C., Jenson, J.M., Smith, J.W., & Frawley, P. J. (in press). Chemical aversion treatment of alcohol dependence.
- Jackson, T.R., & Smith, J.W. (1978). A comparison of two aversion treatment methods for alcoholism. *Journal of Studies on Alcohol*, 39(1), 187-191.
- Kaplan, R.F., Meyer, R. E., Stroebel, C.F. (1983). Alcohol dependency and responsivity of an ethanol stimulus as predictors of alcohol consumption. *British Journal of Addiction*, 78, 259-267.

- Knowles, P. L., Smith, J.W., & Lemere, F. (1983). A longitudinal analysis of patient characteristics at a private alcoholism hospital. *Journal of Studies on Alcohol*, 44(3), 524-529.
- Lemere, F. & Voegtlin, W. L. (1940). Conditioned reflex therapy of alcoholic addiction: Specificity of conditioning against chronic alcoholism. *California and Western Medicine*, 53(6), 1-4.
- Maisto, S. A., & O'Farrell, T. J. (1985). Comment on the validity of Watson et al. "Do alcoholics give valid self-reports?" *Journal of Studies on Alcohol*, 46(5), 447-450.
- Marlatt, G.A., & Gordon, J. R. (1980). Determinants of relapse: Implications for the maintenance of behavior change. In P.O. Davidson & S. M. Davidson (Eds.), *Behavioral medicine: Changing health lifestyles*. New York: Brunner/Mazel.
- McLachlan, J. (1974). Therapy strategies, personality orientation and recovery from alcoholism. *Canadian Psychiatric Association Journal*, 19, 25-30.
- Nathan, P.E., & Skinstad, A. (1987). Outcome of treatment for alcohol problems: Current methods, problems, results. *Journal of Consulting and Clinical Psychology*, 55(3), 332-340.
- Patton, M. (1979). *The outcomes of treatment: A study of patients admitted to Hazelden in 1976*. Center City, MN: Hazelden Foundation.
- Pettinati, H., Sugeran, A. A., DiDonato, N., & Maurer, H. S. (1982). The natural history of alcoholism over 4 years after treatment. *Journal of Studies on Alcohol*, 43(3), 201-215.
- Rawson, R. A., Obert, J. L., McCann, M. J., & Mann, A. J. (1986). Cocaine treatment outcome: Cocaine use following inpatient, outpatient, and no treatment. *NIDA Research Monograph Series*, 67, 271-277.
- Smith, J.W. (1966). Conditioned reflex aversion treatment of alcoholism. *Western Medicine Medical Journal*, 7(12), Suppl. 3, 45-47.
- Smith, J.W. (1982). Treatment of alcoholism in aversion conditioning hospitals, Chapter 72. *Encyclopedic handbook of alcoholism*. E. M. Pattison & E. Kaufman (Eds.), New York: Gardner Press.
- Smith, J.W., & Frawley, P. J. (1990). Long term abstinence from alcohol in patients receiving aversion therapy as part of a multimodal inpatient program. *Journal of Substance Abuse Treatment*, 13, 77-82.
- Smith, J.W., Lemere, F., & Dunn, R.B. (1971). Pentothal interviews in the treatment of alcoholism. *Psychosomatics*, 12(5), 330-331.
- Smith, J.W., Schmeling, G., & Knowles, P. L. (1988). A marijuana smoking cessation clinical trial utilizing THC-free marijuana, aversion therapy, and self-management counseling. *Journal of Substance Abuse Treatment*, 5(2), 89-98.
- Sobell, L.C., & Sobell, M. B. (1974). Outpatient alcoholics give valid self-reports. *Journal of Nervous and Mental Disease*, 161(1), 32-42.
- Sobell, L.C., Maisto, S. A., Sobell, M. B., & Cooper, A.M. (1979). Reliability of alcohol abusers self-reports of drinking behavior. *Behavior Research & Therapy*, 17, 157-160.
- Sobell, M. B., Brochu, S., Sobell, L.C., Roy, J., & Stevens, J.A. (1987). Alcohol treatment outcome evaluation methodology: State of the art 1980-1984, *Addictive Behaviors*, 12(2), 113-128.
- Sobell, M. B., Sobell, L.C., & Vanderspek, R. (1979). Relationships among clinical judgment, self-report, and breath-analysis measures of intoxication in alcoholics. *Journal of Consulting and Clinical Psychology*, 47(1), 204-206.

- U.S. Bureau of the Census. Statistical abstract of the United States: 1986 (106th ed.), Washington, DC: U.S. Department of Commerce.
- Voegtlin, W. L. (1940). The treatment of alcoholism by establishing a conditioned reflex. *American Journal of Medical Sciences*, 199, 802-810.
- Voegtlin, W. L. , Lemere, F. , & Broz, W.R. (1 948). Conditioned reflex therapy of alcoholic addiction 111: An evaluation of present results in the light of previous experiences in this method. *Quarterly Journal of Studies on Alcohol*, 1(3), 501-516.
- Watson, C. G. (1985). More reasons for a moratorium: A reply to Maisto and O'Farrell. *Journal of Studies on Alcohol*, 46(5), 450-453.
- Watson, C. G., Tilleskjer, C., Hoodecheck-Schow, E. A., Pucel, J., & Jacobs, L. (1984). Do alcoholics give valid self-reports? *Journal of Studies on Alcohol*, 45(4), 344-348.
- Wiens, A. N., & Menustik, C. E. (1983). Treatment outcome and patient characteristics in an aversion therapy program for alcoholism. *American Psychologist*, 39(10), 1089-1096.