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**COMPARING OUTCOME OF RESIDENTIAL AND INTENSIVE
OUTPATIENT TREATMENT SERVICES
FOR SUBSTANCE DEPENDENCE**

by

Shawn E. Channell

**A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
Department of Psychology**

**Western Michigan University
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COMPARING OUTCOME OF RESIDENTIAL AND INTENSIVE OUTPATIENT TREATMENT SERVICES FOR SUBSTANCE DEPENDENCE

Shawn E. Channell, Ph.D.

Western Michigan University, 1999

The past 20 years have witnessed a significant increase in the number of published studies comparing inpatient with outpatient substance dependence treatment. The majority of these studies have reported no benefit for those recipients receiving more intensive treatment. However, the outpatient treatment investigated in these studies has typically been day treatment, often involving 27 hours a week of participation, and not intensive outpatient treatment (IOP), which involves 12 or fewer hours of participation per week. Additionally, few published studies have compared alcohol and cocaine dependent populations. This study was designed to compare effectiveness of the residential and intensive outpatient levels of treatment for both alcohol and cocaine dependent populations.

Forty-eight participants were randomly selected from a total pool of 132 eligible participants and assigned to one of four groups: (1) alcohol dependent in residential treatment; (2) alcohol dependent in IOP treatment; (3) cocaine dependent in residential treatment; and, (4) cocaine dependent in IOP treatment.

The groups were compared at intake, 10 days, 30 days, and 60 days after entering

treatment on the following variables: drug/alcohol use, employment status, denial, 12 step participation, relapse prevention skills, medical status, psychiatric status, and social support. Data was gathered from four scales of the Addiction Severity Index (McLellan et al., 1980), as well as an assessment developed by the author.

Results indicate that both residential and IOP treatments are effective in reducing problems related to drug and alcohol use, as well as improving employment status, denial, 12 step participation, relapse prevention skills, and psychiatric status. However, improvement did not occur in the areas of medical status or social support for either group. There were few significant differences between the residential and IOP groups in areas of improvement. Additionally, significant differences were not apparent between the alcohol and cocaine dependent groups. Relapse rates were similar for all groups. Overall, the results support the use of IOP treatment as a viable alternative to residential treatment for alcohol dependent and cocaine dependent patients at a cost of roughly one-third that of residential placement.

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Shawn E. Channell

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INTRODUCTION

Drug Abuse and Dependence in the 1990s

Data obtained as part of the Epidemiological Catchment Area Study of the National Institute of Mental Health indicate that nearly 20% of the general population of the United States (approximately 48 million people) meet criteria for substance dependence or abuse at some point in their life (Regier et. al., 1990). An economic analysis of addictions treatment prepared for the President's Commission on Model State Drug Laws (Langenbucher, McCrady, Brick, & Esterly, 1993) estimated that the cost of substance dependence and abuse to U.S. Society, both for direct services to the individual and services to the family, lies between \$150 billion and \$200 billion annually.

The use of drugs and alcohol have been described in numerous ways, including both clinical and popular culture terms. Among the more socially acceptable popular terms are "addict" and "alcoholic." However, these terms lack formal definitions and will therefore not be utilized in the following discussion. Rather, the terms "substance dependence" (e.g., alcohol dependence, cocaine dependence) and "substance abuse" (e.g., alcohol abuse and cocaine abuse) will be utilized with diagnostic criteria selected from the *Diagnostic and Statistical Manual (DSM-IV, 1994)* as defining factors. *DSM-IV* defines "substance dependence" as follows:

... a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues use of the substance despite significant substance-related

problems. There is a pattern of repeated self-administration that usually results in tolerance, withdrawal, and compulsive drug taking behavior (p. 176).

“Substance abuse” is defined as follows:

... a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances ... Unlike the criteria for Substance Dependence, the criteria for Substance Abuse do not include tolerance, withdrawal, or a pattern of compulsive use and instead include only the harmful consequences of repeated use (p. 182).

For more than 20 years the United States has attempted to deal with the problems of substance abuse and dependence through what has commonly been referred to as “The War on Drugs.” This “war” has focused primarily on combating drug addiction and abuse by concentrating on stopping the flow of illegal drugs and punishing the user rather than focusing on drug abuse prevention, education, or addiction treatment (Firshein, 1998). Only one third of the billions of dollars the federal government spends fighting substance addiction is targeted at prevention and treatment; two thirds continue to be devoted to law enforcement and interdiction of drugs (Baum, 1996; Firshein, 1998). This statistic may in fact be lower, according to Neegaard (1998), the nation spends only 20% of its \$17 billion drug-control budget to treat those individuals dependent on substances.

Every dollar spent on substance abuse treatment is estimated to produce at least seven dollars worth of savings in terms of healthcare costs, increased productivity, and reductions in accidents (Firshein, 1998; Neegaard, 1998). The 1996 President's Commission on Model State Drug Laws found that about 65 percent of all emergency hospital visits in the U.S. are alcohol- and drug-related. Following treatment, according to Firshein, absenteeism, disability days, and disciplinary actions in the workplace drop

by fifty-percent. A RAND Corporation study found that providing treatment to all addicts in the U.S., at a price tag of \$21 billion, would save more than \$150 billion in social costs over the next 15 years, a sevenfold return on investment (Firshein, 1998).

The data cited above clearly indicate the importance of an increased focus on treatment for substance dependence and abuse in this country. One area of research requiring urgent attention is identifying which types of treatment are most effective at the overall lowest cost to society. This becomes especially important in a society where the current *zeitgeist* is prosecution and not rehabilitation. There are currently a wide variety of treatment modalities available, with an equally wide range of treatment costs.

An examination of the modern history of substance dependence treatment reveals that until the mid-1970s the model for substance dependence treatment remained fairly uniform: 28-day residential/inpatient treatment focused on individual therapy, psychoeducational information, relapse prevention, and an introduction to 12-Step recovery programs (Rotgers, Keller, & Morgenstern, 1996). As controlled research on the outcome of substance dependence treatment has increased, a trend has begun to emerge which indicates that traditional substance dependence treatment, while beneficial for some, may have little long-term benefit (Rotgers, Keller, & Morgenstern, 1996).

Research evidence, coupled with an overall trend to contain the cost of treatment brought about by managed care, have contributed to the significant change in the way substance dependence treatment is currently offered. Perhaps the most noticeable change has been a shortening of the average length of stay to two weeks or less (McKay, Cacciola, McLellan, Alterman, & Wirtz, 1997). For example, Rotgers, Keller, and

Morgenstern (1996), discussing a treatment facility with which one of the authors was affiliated, point to a drop in the length of an inpatient stay from 19 to 11 days between 1993 and 1994, almost a 50% decrease within the space of one year.

As the field of substance dependence treatment changes, and the importance of effective substance dependence treatment increases, the need for research investigating what works in treatment and what does not also increases in importance. The National Center on Addiction and Substance Abuse at Columbia University specifically points out the need for increased research that will tell us what works in prevention and treatment, for whom, and at what cost. Given the tremendous cost of substance dependence and abuse treatment and management, greater investment in evaluating treatment may yield greater benefits in reducing cost (CASA, 1996).

To successfully evaluate and/or conduct research in the field of substance dependence it is important that there is an understanding of the methods utilized to place individuals in treatment, as well as the treatment outcome literature comparing more traditional inpatient treatment with contemporary outpatient treatment.

Levels of Care in Substance Dependence Treatment

The American Society of Addiction Medicine (ASAM) Patient Placement Criteria - Second Edition (1996) identify five levels of service ranging from early intervention through outpatient services to medically-managed intensive inpatient care. The levels of service described in the criteria are:

Level 0.5: Early Intervention

- Level I: Outpatient Services**
- Level II: Intensive Outpatient/Partial Hospitalization Services**
- Level III: Residential/Inpatient Services**
- Level IV: Medically-Managed Intensive Inpatient Services.**

The level of treatment indicated for each individual is identified by assessing the following problem areas:

1. Acute intoxication and/or withdrawal potential.
2. Biomedical conditions and complications.
3. Emotional/behavioral conditions and complications (e.g., psychiatric conditions, psychological, or emotional/behavioral complications of known or unknown origin, poor impulse control, changes in mental status, or transient neuropsychiatric complications).
4. Treatment acceptance/resistance.
5. Relapse/continued use potential.
6. Recovery/living environment.

At the level of Early Intervention (Level 0.5), the least intensive of the four levels, the individual may experience problems related to substance use, but does not meet criteria for Substance-Related Disorder, as indicated by *DSM-IV* (1994). Typically treatment at the early intervention stage will be minimal and psychoeducational in nature. Often treatment at this level will focus on prevention.

Outpatient Services (Level I) provide less than nine hours per week of structured programming. Intensive Outpatient Services (IOP, Level II.1) provide nine or more

hours of structured programming per week. Partial Hospitalization or Day Treatment (Level II.5) provides 20 or more hours of clinically intensive programming per week. Residential (Level III.1) and Inpatient (Level III.3) provide organized services staffed by addiction treatment personnel who provide a planned regimen of patient care in a 24-hour live-in setting. Medically Managed Inpatient Services (Level IV) provide inpatient services to those individuals who are experiencing significant medical complications.

Comparison of Outcome of Inpatient and Outpatient Treatment Programs

It is well established that inpatient and residential care are the most expensive of the various types of substance dependence treatments available (McLellan et al., 1997; Rogers et al., 1996). Neergaard (1998) points out that the costs of individual residential drug treatment programs range from \$4,400 to \$6,800 a year, whereas traditional outpatient treatment costs approximately \$1,800 and intensive outpatient \$2,500.

It had been assumed for many years that more intensive, and therefore more expensive, treatment was also the most effective. Washton (1997) states, for example, that in the 1970s and early 1980s it was:

the prevailing attitude among many workers in the field and among the public at large that addicts must be removed from their drug-using environment (and preferably for a very long time) in order to be meaningfully rehabilitated. Outpatient treatment was seen as a poor alternative to extended residential care (p. xxii).

However, as treatment studies began examining different levels of treatment, evidence began to emerge that perhaps this long-standing assumption was incorrect. One of the earliest comparison studies was conducted by McClachlan and Stein in 1982. The

authors compared outcome, at one year post-treatment, of 100 alcohol dependent patients randomly assigned to a four-week program in either inpatient or partial day treatment. The authors found that the groups did not differ on outcome measures of alcohol use, mental, medical or legal status.

In 1983 the Congressional Office of Technology Assessment (Saxe, Dougherty, Esty & Fine, 1983), likely spurred on by the outcome of studies like that conducted by McClachlan and Stein (1982), released a report which reviewed the existing research comparing inpatient and day treatment for alcohol abuse and/or dependence. The report stated that there was substantial evidence that indicated less costly outpatient treatment was as effective as more costly inpatient care.

Three years later, Miller and Hester (1986) conducted a meta-analysis and generated the following conclusion:

26 controlled comparisons have consistently shown no overall advantage for residential over non-residential settings, for longer over shorter inpatient programs, or for more intensive over less intensive interventions in treating alcohol abuse (p. 794).

Harrison, Hoffman, Gibbs, Hollister and Luxenberg (1988) investigated the efficacy of inpatient and intensive outpatient treatment for 319 alcohol dependent patients. These authors found, like Miller and Hester, no significant differences between intensive and less intensive treatment settings.

In 1988 the Congressional Office of Technology Assessment (Saxe & Goodman, 1988) updated its findings with a study focusing on controlled research. The results of this study reaffirmed the findings from the 1983 study that there is no evidence that

inpatient treatment is more effective than outpatient treatment.

All of the studies discussed thus far have focused on treatment for alcohol abuse or alcohol dependence. Results of research investigating treatment outcome of cocaine dependent individuals have been less conclusive, but have largely supported the concept that there is little advantage of residential treatment over outpatient treatment.

Alterman et al. (1994), for example, compared the effectiveness and costs of day treatment and inpatient rehabilitation for 111 cocaine dependent individuals. The authors found that a significantly greater proportion of inpatient subjects completed treatment than did outpatient subjects. However, consistent with data from the alcohol dependence literature, they found little evidence of differential improvement between groups despite the fact that completion of day treatment cost 39% less than completing inpatient treatment.

Schneider, Mittelmeier, and Gadish (1996) investigated day treatment and inpatient treatment for 75 cocaine dependent patients. The authors followed up at both three months and six months post-treatment. At three months the subjects having received inpatient treatment had a statistically significant higher rate of abstinence; however, this difference had disappeared by six months. Based on these results the authors conclude that day treatment is a viable alternative to inpatient treatment over the long term.

McKay, Alterman, McLellan, and Snider (1994) investigated the outcome of a day treatment program for both cocaine and alcohol dependence. The authors focused primarily on the relationship between day hospital treatment goals, self-help group

participation, and substance use outcome for 180 male subjects. Results indicated a better outcome for those clients completing day treatment and participating in a self-help group. Significant differences were not found between cocaine dependent and alcohol dependent subjects with regard to outcome. This sample was restricted to male veterans, 82% of which were African-American with low socio-economic status.

Walsh et al. (1991) conducted one of the few studies indicating that outpatient services are not as effective as inpatient services. The authors found that cocaine abusers assigned to inpatient treatment were more likely to have better outcomes than cocaine abusers sent to Alcoholics Anonymous or given their choice of treatment. These results suggest that inpatient treatment may improve outcome when compared with AA or the client's choice of placement. However, it is important to recognize that Walsh et al. compared inpatient placement only to basic outpatient treatment or self-help group attendance, and did not investigate intensive outpatient services.

Overall, research results bring into question the effectiveness of residential treatment and other intensive treatment modalities when contrasted with less intensive, and less expensive, services. However, McLellan et al. (1997) make the point that "it is possible to criticize all of these studies on methodological, clinical, and practical grounds" (p. 59). Unfortunately, it is true that there are a number of areas which reduce the ability to draw firm conclusions from these studies.

For example, there are fewer studies investigating cocaine dependence than there are investigating alcohol dependence. A likely reason for this is the relative recency of broad cocaine use, in relation to a long history of problems related to alcohol use. While

both diagnoses are instances of "substance dependence," they differ with regard to physiological and sociological factors. These differences may contribute to differences in the recovery process as well.

Available research has primarily compared inpatient treatment with day treatment or strict outpatient placement. While day treatment is less intensive than inpatient treatment, it is often substantially more intensive than IOP treatment. However, there has been little research investigating IOP treatment. The paucity of research investigating intensive outpatient substance dependence treatment is alarming, given the fact that the modality is being utilized with increasing regularity (Campbell, Gabrielli, Laster, & Liskow, 1997).

The effects of managed care have also served to significantly reduce the standard length of stay utilized in residential placement. Many of the published studies available investigating residential treatment have utilized a 28-day length of stay, much more than the 10 day or less length of stay which is very prevalent in many treatment centers presently. Clinical research has had difficulty keeping up with the rapidly reducing length of stay.

Additionally, many of the studies in the published literature are conducted at university medical centers or Veteran's Administration Medical Centers. Gottheil, Sterling and Weinstein (1995) point out that though these settings may have numerous resources, abundant well-trained staff, and utilize strict criteria for determining which patients to include in the study, they are also likely to be very different from the more typical, often publicly funded, treatment clinics. Additionally, the populations investigated

in these studies are typically fairly homogeneous with regard to variables such as race and gender. These differences may significantly affect the generalizability of these studies to other populations.

Each of these limitations will be discussed below.

Limitations of Previous Research

Minimal Comparisons of Cocaine and Alcohol Dependence

Harrison, Hoffman, Gibbs, Hollister & Luxenberg (1988) point out two longstanding assumptions in the field of substance dependence: "1) There are no significant differences between people who drink and people who also use drugs, and 2) there are no significant differences between alcohol abuse and drug abuse (p. 359)."

Although there is some reason to assume that similar treatment outcome results would be found between cocaine dependent and alcohol dependent individuals, there has been very little research to support this assumption (Schneider, Mittelmeier, and Gadish, 1996). There are a number of differences between alcohol and cocaine and their abuse which could potentially contribute to differing treatment outcomes.

Cocaine

The use of cocaine for mood altering purposes is not a recent development. On the contrary, coca leaves (the source of cocaine) have been chewed for religious, medicinal, and psychological purposes for at least 15 centuries. Archaeological evidence

reveals that coca leaves were placed in Peruvian grave sites as early as 500 A.D. (Weiss, Mirin, and Bartel, 1994). It was not until 1855 that cocaine was first refined from the coca leaf and was called, at that time, *erythroxyline*. It was first termed *cocaine* in 1859.

By the year 1900, use and experimentation of the compound was flourishing. Among the staunchest admirers and proponents of cocaine's virtues was Sigmund Freud. Freud referred to cocaine as a "magical drug" and recommended it for numerous maladies, including anesthesia, pain, depression, low sexual drive, alcoholism, morphine addiction, and asthma. Freud eventually recanted his ebullience regarding cocaine use, primarily after realizing its addictive nature.

In 1886 John Styth Pemberton created a new patent medicine to treat "all nervous infections." The name of the new medication was *Coca Cola* and its primary ingredient was cocaine. The popularity of Coca Cola further increased the use of cocaine in the United States. Eventually, Coca Cola substituted caffeine as its active ingredient, replacing cocaine. However, decocainized coca leaves are still used in Coca Cola (Weiss, Mirin, and Bartel, 1994).

The use of cocaine was first restricted in 1914 by the Federal Harrison Narcotics Act. From this period until the early 1970s cocaine use was not prevalent beyond the fringe culture, including movie stars, jazz musicians, and wealthy thrill seekers. Legal reasons played some part in the diminished use of cocaine during this period; however, the discovery of amphetamine likely played a larger part (Julien, 1988). Amphetamine cost less than cocaine and the effects last longer. In the late 1960s, Federal restrictions on amphetamine distribution raised the cost of amphetamine to such an extent that

cocaine once again became attractive.

By 1970 cocaine had become *the* drug for the rich and powerful. In fact, cocaine received glamorization not seen since nearly a century prior, albeit this time from popular culture rather than physicians. By 1985, approximately 5.8 million people in the United States were current users of cocaine. Although these numbers have declined significantly, to 1.9 million by 1991, cocaine remains a major public health problem today (Weiss, Mirin, and Bartel, 1994).

Cocaine is classified as a central nervous system (CNS) stimulant. Primarily, the compound elevates mood, induces euphoria, increases alertness, reduces fatigue, decreases appetite, improves task performance and relieves boredom. Pharmacologically, cocaine has two primary actions. First, it is a potent local anesthetic. Second, it is a powerful stimulant of dopamine neurotransmission (Julien, 1988).

There are three primary methods of ingestion for cocaine, intranasally ("snorting"), smoking, and injection. Intranasal cocaine use reached its peak in the mid 1980s, with approximately 61% of cocaine users reporting predominantly intranasal use in 1983. By 1989 this statistic dropped to approximately 39% (Weiss, Mirin, and Bartel, 1994).

When cocaine is used intranasally it is rapidly absorbed into the bloodstream. The drug can be detected in the blood within three minutes after use. Blood level of cocaine increases quickly and peaks between 15 and 60 minutes following use. The effects of the drug on mood are most prominent within 15 minutes after use. Physical changes, primarily-increased heart rate and blood pressure, occur strongly within 15 to 20 minutes

and dissipate after about an hour (Weiss, Mirin, and Bartel, 1994).

Following intranasal use of cocaine, the user may experience anxiety, depression, fatigue, and irritability. These symptoms are often associated with a desire for more cocaine, typically as a way to avoid the symptoms themselves.

While intranasal use of cocaine has decreased over the past several years, the change has been more than made up for by an increase in the number of people smoking cocaine. Without question this increase can be attributed to the introduction of "crack" cocaine to the United States in 1985. Users of crack tend to be younger than those who use cocaine intranasally, and are also more likely to use other illicit drugs (Smart, 1991).

Prior to 1985, smoking cocaine was popular in the form of "freebasing," introduced in 1974. Freebase is made by combining cocaine hydrochloride with ammonia and ether. The process is very dangerous due to the use of volatile substances and high heat in order to extract the cocaine base. Crack cocaine is made by combining cocaine hydrochloride with water and sodium bicarbonate, resulting in an alkaline precipitate of cocaine. This method is easier, and safer, than preparing cocaine freebase.

The smoking of crack causes a very rapid increase in the blood level of cocaine and, in contrast to intranasal use, results in near instantaneous psychological effects which peak at approximately five minutes. Euphoria is typically the emotional experience and occurs almost immediately, accompanied by physiological effects such as a rise in blood pressure, pulse, body temperature and respiratory rate (Weiss, Mirin, and Bartel, 1994). The euphoria dissipates 10 to 20 minutes after inhalation. Many crack cocaine users describe feelings of anxiety and depression following drug use. These feelings are often

accompanied by an intense craving for more crack. Immediate repetitive use of cocaine is more common when smoked than when taken by other methods.

Intravenous cocaine use is the least popular method of administration. Cocaine is prepared for intravenous administration by placing between one-tenth and one-quarter of a gram in a spoon and adding water. This solution is drawn into a syringe and injected. Like smoking crack, euphoria occurs almost immediately. Intravenous cocaine use is highly addictive for the same reasons that smoking cocaine is: intensity of the emotional reaction, immediate onset, and the short lasting high. IV cocaine users often report depression and irritability within five to 15 minutes after use, followed by an intense desire for more cocaine. It is common for intravenous cocaine users to inject the drug every five minutes until their supply is exhausted (Weiss, Mirin, & Bartel, 1994).

Gawin and Klaber (1986) investigated intranasal, smokers, and intravenous cocaine users with regard to their method of cocaine use. Results indicated that although both intranasal and intravenous cocaine users used similar amounts of cocaine in the course of a week, the intravenous user tended to use very large amounts of cocaine during discrete, brief periods, whereas the intranasal user used the drug more often but at lower doses. Cocaine smokers used nearly twice as much cocaine as the other groups, with longer runs and even heavier drug use than either group.

Cocaine acts as an activator of the sympathetic nervous system, which controls functions such as blood pressure, heart rate, heart beat, blood sugar levels, mood, and appetite (Weiss, Mirin, and Bartel, 1994). By activating the sympathetic nervous system cocaine initiates responses characteristic of the fight or flight response, including:

euphoria, decreased appetite, mental stimulation, rapid heartbeat, increased blood pressure, elevated body temperature, increased breathing rate, increased rapidity of electrical activity in the brain, and elevated blood sugar level.

Specifically, cocaine appears to prevent the reuptake of dopamine, norepinephrine, and serotonin into the presynaptic neuron after they have been released into the synapse. Cocaine may also function as an agonist for dopamine and norepinephrine, causing more of these neurotransmitters to be released into the synaptic cleft. The increased availability of these neurotransmitters is thought to play a significant role in the behavioral and psychological effects of cocaine. When cocaine is used chronically, the sensitivity of dopamine receptors is altered, thereby resulting in a need for increased neurotransmitters in order to feel “normal” and even greater numbers to feel “high.” This change in dopamine receptors has been used to explain the development of tolerance to cocaine, as well as withdrawal (Weiss, Mirin, and Bartel, 1994).

A 30% increase of cocaine related emergencies occurred between 1990 and 1991. This increase resulted in 25,000 cocaine related emergencies reported in a three-month period in 1991 (Weiss, Mirin, and Bartel, 1994). In 1989, nearly 2,500 people died of cocaine overdose. Drug related complications can occur immediately as the result of taking too much of the drug (i.e., overdose) by way of heart attack, ventricular tachycardia or fibrillation, cerebral hemorrhage, heatstroke, seizure, and respiratory failure. Prolonged drug use can result in chronic nasal problems due to intranasal use, lung damage due to smoking cocaine, heart damage (cardiomyopathy), vitamin deficiencies, sexual difficulties and psychological problems (Weiss, Mirin, and Bartel,

1994). Beyond these primary medical problems, cocaine can cause significant problems to the fetus during pregnancy if ingested by a pregnant woman. Numerous medical problems can also occur due to the paraphernalia associated with cocaine use (e.g., dirty needles, adulterated cocaine).

Alcohol

Alcohol is the only drug with which deliberate self-induced intoxication is socially acceptable (Julien, 1988). While there are numerous routes of administration for the cocaine user, alcohol is administered almost entirely by mouth. Although injection of alcohol is not unheard of, it is rare and extremely dangerous. Some individuals may also inhale alcohol fumes as a means to getting "high."

Alcohol is completely absorbed into the bloodstream by the gastrointestinal tract. The rate of absorption is dependent on several variables, including: whether or not the individual has eaten, the size of the individual, and the volume of fluid in which the alcohol is taken. Approximately 20 percent of consumed alcohol is absorbed by the stomach. The other 80 percent is absorbed rapidly in the upper intestine (Julien, 1988).

Unlike cocaine, which is a stimulant, alcohol is a depressant and behaves similarly to sedative-hypnotic medications (i.e., benzodiazepines and barbiturates). While cocaine use inhibits the reuptake of neurotransmitters in the synaptic cleft, alcohol is thought to prevent the release of neurotransmitters into the synaptic cleft. By preventing the release of these transmitters, alcohol depresses numerous bodily and cognitive functions.

The psychological effects of alcohol are also similar to those of the sedative-

hypnotics. Low doses of alcohol may have a varying effect which is dependent upon the individual's current mental state and the setting. For example, in some settings moderate alcohol use may result in euphoria or relaxation, while use in another setting or at another time may result in anger, rage, hostility, or social withdrawal. However, as the dosage increases, the psychological effects become more pronounced. Alcohol use can also contribute significantly to the development of mood and affective disorders (Julien, 1988).

The cognitive effects of alcohol use include disorientation, impaired insight and judgement, blackout, and diminished intellectual capabilities. Chronic alcohol use may irreversibly destroy neurons in the brain, producing the permanent dementia referred to as *Korsakoff's syndrome*.

Alcohol also results in numerous physical changes. Alcohol use dilates the blood vessels and long-term use is associated with diseases of the heart, possibly leading to heart failure. The use of alcohol can also produce irreversible changes in the structure and function of the liver, increasing the amount of fatty tissue and resulting in a condition known as *cirrhosis*. Seventy-five percent of all deaths attributed to alcoholism are due to cirrhosis of the liver (Julien, 1988). Chronic alcohol use is also likely to increase the risk of developing cancer in the mouth, throat, and liver. When used with tobacco, the risk of cancer is greatly increased.

When alcohol is consumed with other depressant or sedative-hypnotic medications the effects are additive and can be quite dangerous. This is a concern because minor tranquilizers, such as Valium or Xanax, are often combined with alcohol use, as is the use

of marijuana.

A primary distinction between alcohol and cocaine use can be drawn at the level of physical dependence. While both drugs result in physical dependence, the withdrawal syndrome associated with each is different. While withdrawal from cocaine is typically characterized by mental anguish, depression, intense craving, and sleep disturbance, there are few physical withdrawal symptoms. Withdrawal from chronic alcohol use, however, can result in a period of rebound hyperexcitability that may lead to convulsions, and ultimately, to death. Tremulousness, hallucinations, psychomotor agitation, confusion, disorientation, and sleep difficulty are also common during alcohol withdrawal, and are collectively described as *delirium tremens*.

Comparing Cocaine and Alcohol Dependence

There are two primary distinctions drawn between cocaine and alcohol. First, at a physiological level, cocaine acts as a central nervous system (CNS) stimulant, whereas alcohol acts as a central nervous system (CNS) depressant. Second, cocaine is an illegal substance, whereas alcohol is legal. This distinction carries with it strong social implications. For example, the use of cocaine is more likely to be viewed as socially deviant and unacceptable, whereas the opinion regarding alcohol use is quite different (Washton & Stone-Washton, 1990). Because of the illegality of cocaine, covert and illegal behaviors are required in order to obtain the substance.

Use of the drug itself, be it cocaine or alcohol, carries with it certain expectations regarding the outcome of use. It has long been understood that one's expectations of a

drug's effect will affect one's subjective experience. Jones (1971), for example, demonstrated that individuals who smoked marijuana cigarettes with little or no tetrahydrocannabinol (THC, the psychoactive ingredient in marijuana) claimed to feel "high" when they thought they were smoking THC containing marijuana.

One's experience of drug use can also be greatly affected by the location wherein drugs are used. While alcohol is often associated with social occasions, bars, or drinking at home, cocaine use, especially crack cocaine use, is associated with a very different environment. Crack is typically used in what are referred to as "crack houses," a house where customers come to purchase and use crack. Post and Weiss (1988) demonstrated, in rats, that if drug administration occurred in the presence of other cues or stimuli that these cues or stimuli could be conditioned to evoke some of the responses associated with drug use in the absence of the drug itself. Findings such as this indicate that the setting in which a drug has typically been used may come to serve as a significant drug relapse trigger.

Increased craving is common, for both alcohol and cocaine users, in response to feelings, places or people that have been associated with previous use. However, there appears to be much stronger conditioning of exteroceptive cues associated with cocaine use than with alcohol use. In fact, the rapidity and strength of conditioning with cocaine-use stimuli is of greater magnitude than that of any other substance (Washton & Stone-Washton, 1990). People, environments, emotions, behavior, and experience may become cues which motivate cocaine use to a greater extent than occurs with alcohol. This fact may have a direct impact on treatment and recovery from cocaine dependence. Because

stimulus conditions are so strongly associated with cocaine use, they may have a more significant impact on relapse rates for the cocaine user than they would for individuals using other drugs. For this reason, the altering of the cocaine dependent individuals' environment is crucial to prevent relapse.

Given this information, it is easy to understand the importance many treatment providers have placed on residential treatment, wherein the individual is removed from his or her typical environment. It is ironic that research supports the strong impact the environment has upon relapse to cocaine, yet it has not shown that residential treatment results in a superior outcome.

When compared to alcohol, cocaine has been found to be more reinforcing to the user. For example, it has been found that animals can be taught to engage in certain behaviors (e.g., pressing a lever) to receive cocaine. These animals will continue to work for the drug even when greater work is necessary to obtain it (Weiss, Mirin, and Bartel, 1994). While it is true that animals will also work for alcohol, their response to cocaine is much stronger. Weiss, Mirin and Bartel (1994) point out that the response to cocaine in animal studies is "dramatic and unparalleled" (p. 90). To affirm this statement they cite research that demonstrates that, under conditions of unlimited access to intravenous cocaine, rhesus monkeys continue to work for cocaine and self-administer the drug until it causes death. This phenomenon does not occur when alcohol is used as a reinforcer. The withdrawal process also differs for cocaine and alcohol dependent individuals. Cocaine does not result in the severe withdrawal symptoms, medical symptoms, and mortality rates that are seen in alcohol dependence; therefore, detoxification does not

require intensive medical monitoring or medication (Washton, 1997). The physical improvement of cocaine addicts is also much more rapid than that seen in withdrawal from alcohol. For this reason, motivation to remain in treatment may decrease more rapidly for the cocaine dependent individual than it would for the alcoholic, who would require a much longer period of time to reach a state of improved physical health (Washton & Stone-Washton, 1990).

The absence of severe medical and/or withdrawal conditions may also make cocaine dependent individuals more likely to be admitted for less intensive services. The initial treatment of the cocaine user may focus primarily on cognitive distortions, dysfunctional behavior patterns, motivation, and relapse prevention, as opposed to the early focus on managing physical withdrawal for the alcohol dependent individual.

When compared with the long history of treatment outcome research for alcohol dependence, the treatment of cocaine dependence remains in its infancy (Carroll, 1996). Given the differences between cocaine and alcohol dependence discussed above it is possible that the outcome of treatment for alcohol dependent individuals could not be applied to individuals who are cocaine dependent. For this reason it is important that treatment modalities are investigated at the level of both cocaine and alcohol dependence.

Minimal Investigation of Intensive Outpatient Treatment

Intensive outpatient treatment (IOP), as described by Campbell, Gabrielli, Laster, and Laskow (1997) “provides frequent contact with patients, psychoeducational programming similar to inpatient treatment, and management of relapse issues in the

realistic outpatient setting” (p. 16). Washton (1997) started perhaps the first substance dependence intensive outpatient program in the nation in 1982 with a program for cocaine dependence. According to Washton, the “cocaine epidemic” that emerged during the 1980s was a primary factor in the evolution of intensive outpatient services. At that time, Washton states, treatment providers were prepared to deal only with the treatment of heroin and alcohol dependence. Unlike heroin and alcohol abusers, cocaine abusers required no pharmacologic withdrawal or medication and often showed no serious medical problems. Additionally, evidence had begun to suggest strongly by the mid-1980s that inpatient care was no more effective than outpatient treatment, especially when cost was taken into account (Cummings, 1991). For these reasons IOP treatment became an acceptable treatment option.

Initially IOP was not a recognized modality and third party payers would not reimburse for the service. In the fifteen-year interim, however:

IOP has become an important treatment modality and a widely accepted level of care . . . It is considered a treatment of choice for many substance dependent patients and its popularity continues to grow as clinicians seem to believe in its helpfulness (Gotheil, 1997, p. xvi).

Washton (1997) points out that IOP has become a treatment of first choice for managed care and other third-party payers. However, despite the popularity of IOP, it is not always an appropriate level of treatment (Washton, 1997). Due to the limited amount of research investigating IOP treatment, it is difficult to identify patients who do benefit from IOP or whether, in fact, any patients benefit from it (Gotheil, 1997; Washton, 1997). Three available studies which have investigated IOP treatment are discussed

below.

Harrison et al. (1988) conducted the first, and one of the only, comparison studies investigating IOP and inpatient treatment. Although the authors did not label this treatment “intensive outpatient” they did describe it as involving 20 evening sessions lasting three hours each, which is consistent with what is now considered IOP placement. The authors compared outcome at six months for 319 alcohol users treated at this level of care, as well as at the inpatient level of care, and found no significant differences.

Campbell, Gabrielli, Laster and Liskow (1997) investigated the efficacy of IOP treatment for crack cocaine. The authors found that the subjects participating in IOP demonstrated significant improvement on the composite scales of the Addiction Severity Index (ASI; McLellan et al., 1980) at six month follow-up. This study investigated only the efficacy of IOP treatment and did not compare IOP placement to other levels of care.

Weinstein, Gottheil, and Sterling (1997) conducted a five year randomized, controlled study comparing IOP with individual counseling and individual counseling plus one group treatment session per week. Results indicated improvement for all treatment groups, with those individuals remaining in treatment longest showing greater improvement. However, the authors found no significant outcome differences between the treatment groups, nor did they contrast IOP with more intensive levels of care.

Unfortunately, the studies discussed above represent the first studies of IOP, either IOP alone, or comparisons of IOP and other treatment modalities (Gottheil, 1997). In 1991 Cummings pointed out that the efficacy of IOP treatment had yet to be tested. By 1997, little had changed and Gottheil stated the urgent need for many more research

comparisons of different IOP programs with other treatment modalities. "At present," states Gottheil, "IOP is well established clinically, but the research story remains to be told" (p. xviii).

Summary

Substance abuse and dependence continue to be significant problems in this country. The immense cost of controlling, and treating drug use, coupled with the profound impact of drug use on health care costs, make explicit the need for effective treatment and prevention. In an era dominated by managed care, however, the importance of determining the most appropriate treatment at the least possible cost is made all the more urgent.

Research findings over the past decade indicate that residential/inpatient treatment, while being the most expensive, may not be more effective than less intensive and less costly day treatment. These findings, combined with the impact of managed care, have greatly changed the field of substance dependence treatment. However, as length of stay continues to become abbreviated, research must be provided to support the effectiveness of currently accepted treatment levels.

Research to date has focused primarily on comparing residential treatment to partial day hospitalization, neglecting the currently prevalent intensive outpatient level of care. As the use of IOP becomes more prevalent, as it undoubtedly will, the need for outcome data contrasting this modality with more, and less, intensive modalities will be greatly needed.

In addition to the limited amount of research investigating IOP treatment, there are other areas of substance dependence treatment which require further investigation. First, existing treatment outcome research has typically used the length of stay considered "standard" at the time of the study. For this reason, the majority of research has investigated 28 day or longer residential programs. This is currently a length of stay which is likely to be unacceptable, in all but the most severe cases, by private insurance or sources of public funding. For this reason, the treatment outcome literature must be persistently "updated" in order to keep pace with length of stay restrictions.

A further concern involves the populations investigated. There is not a great deal of treatment outcome research contrasting outcome of alcohol and cocaine dependent subjects. Typically research has focused primarily on either one population or the other. Additionally, the majority of treatment research in this area has been conducted at VA or University Medical Centers. These centers often investigate a fairly homogeneous group of participants, for example exclusively veteran. Research is also needed which investigates independent, publicly-funded treatment centers.

This study compared treatment outcome for alcohol and cocaine dependent participants treated at the level of residential or intensive outpatient treatment. The residential length of stay utilized in this study was 10 days. Additionally, the population investigated in this study was more diverse with regard to diagnosis, ethnicity, and gender than were the populations investigated in previous published studies in this area.

Purpose and Hypotheses

The primary purpose of this study was to evaluate differences in outcome for substance dependent participants placed in residential and intensive outpatient treatment following a 10 day treatment protocol. It has been found in other research that there is “no overall advantage for residential over non-residential settings” (Miller & Hester, 1986, p. 794). However, there has been little investigation of the impact of IOP placement in relation to residential treatment. There have also been few studies investigating outcome differences between alcohol dependent subjects and those dependent on cocaine. Additionally, this study utilized a currently standard length of stay.

Treatment outcome in this study was measured by self-report and assessed 8 areas related to recovery from substance dependence: (1) medical status, (2) employment status, (3) drug/alcohol use, (4) psychiatric status, (5) denial, (6) AA or NA attendance, (7) relapse prevention strategies, and (8) social support system.

The primary hypothesis of this study was that there would be no significant difference for alcohol or cocaine dependent participants at any level of care on measures of drug/alcohol use, employment status, denial, 12 step participation, relapse prevention, medical status, psychiatric status, or social support. In effect, it was hypothesized that general treatment outcome is not affected by treatment level.

METHOD

Experimental Design

This study used a 2 X 2 between-groups design to examine differences in outcome for alcohol and cocaine dependent participants placed in residential and intensive outpatient treatment following a 10 day treatment protocol. Treatment outcome was again evaluated at 30 and 60 days after beginning treatment.

Participants

Participants included 48 chemically dependent clients receiving treatment at Gateway Recovery Services between the months of May 1998 and September 1998. Participants were referred from a number of sources, including therapists outside of Gateway Recovery Services, medical centers, Central Diagnostic Referral Agencies (CDRs), primary care physicians and from the judicial system. Prior to consenting to participate in this study, all participants were assigned to one of two treatment levels by an intake specialist; the treatment levels were residential treatment or intensive outpatient treatment (IOP).

Following treatment placement, 48 participants were randomly selected from a total pool of 132 clients who met criteria to participate in this study. At intake, or

discharge from detoxification, participants were asked to sign an informed consent form (See Appendix A) and to complete an intake evaluation (See Appendix B). In the event that a client was currently intoxicated by alcohol, as determined by blood alcohol content (BAC) and/or had used drugs within the past 24 hours, completion of the informed consent form and evaluation was delayed until after detoxification.

Only subjects meeting criteria for alcohol or cocaine dependence as their primary Axis I condition participated in this study. Evaluation by an intake specialist and a treatment provider were utilized in an effort to exclude clients with other primary Axis I diagnoses.

Materials and Apparatus

The study was conducted at Gateway Recovery Services, a residential and outpatient center specializing in the treatment of addictive disorders. The treatment approach at Gateway Recovery Services is based upon the Minnesota Model, also referred to as the Minneapolis Model which draws heavily from the guiding principles of Alcoholics Anonymous. Alcohol, cocaine and other substance dependent clients are treated together in the program, although different treatment focuses may be emphasized for different addictions. Treatment focuses on overcoming denial, fostering participation in Alcoholics and/or Narcotics Anonymous (AA/NA), and providing information about the process of addiction and cues to relapse. The program consists of individual therapy, daily group therapy, and daily education sessions. For the purposes of this study, treatment was provided by five certified addiction counselors (CAC-I).

Measures of emotional problems, treatment acceptance, relapse potential, and suitability of the recovery environment were arrived at by using criteria specified by the American Society of Addiction Medicine (ASAM) Patient Placement Criteria for Substance-Related Disorders, Second Edition (PPC-2, 1996).

PPC-2 indicators were arrived at through completion of a questionnaire including questions designed to specifically address ASAM criteria and through information gathered by Gateway intake specialists at the time of treatment intake.

Clients at Gateway Recovery are offered treatment at primarily five levels of care: detoxification, residential, day, intensive outpatient, and outpatient treatment. Clients are offered treatment consistent with their need as determined by ASAM criteria (1996). However, it is typical that insurance providers will not reimburse the client at a level consistent with the recommended level of care. For this reason, many clients will elect to be placed at a less intensive level of care which will be more fully reimbursed by their insurance provider. For example, based upon ASAM criteria a clinical decision may be made that the client requires residential treatment. However, the insurance provider will reimburse only at a level which makes intensive outpatient treatment an affordable option for the client. The client will typically then choose IOP as an alternative to the more costly residential treatment. This type of placement allows for investigation of clients exhibiting similar needs for service, but receiving different levels of care. Clients may also elect to receive a less intensive level of treatment in order to minimize conflicts with work, school, or family due to time commitments. This is a common motivating factor for participation in IOP.

This study investigated treatment at two levels of care: residential and intensive outpatient. Residential treatment (ASAM Level III.1) provides services staffed by addiction treatment personnel providing a planned regimen of patient care in a 24 hour live-in setting. Intensive outpatient treatment (ASAM Level II.1) provides nine or more hours of structured programming per week; individuals at this treatment level attend three hours of structured programming at least three times weekly. Additional distinctions between these levels of care are as follows: residential treatment involves 24 hour care, mandated AA/NA attendance, structured physical activities, acupuncture and additional didactic presentations not available at the IOP level.

Measures

Independent Variables

This study utilized two independent variables: Axis I diagnosis and treatment group. Axis I diagnosis for participants in this study was either cocaine dependence or alcohol dependence as defined by the *Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV;* American Psychiatric Association, 1994). Diagnosis was arrived at based upon examination and interview by an intake specialist, evaluation by the primary treatment provider, and chart review by the primary researcher. Participants were assigned to either residential or intensive outpatient (IOP) treatment groups.

Participants were not randomly assigned to treatment groups. Harrison, Hoffman,

Gibbs, Hollister and Luxenberg (1988) discuss the “concerns and pragmatic realities that became insurmountable barriers to a random assignment design” (p. 362) in discussing their examination of treatment outcome. A number of obstacles made random assignment to treatment group difficult in this study. Foremost among these was a refusal by diagnostic and referral agencies, as well as clinical staff, to consider outpatient treatment as a viable option for those participants meeting ASAM criteria for residential treatment who have a source of funding for such treatment. In other words, if a patient had a funding source that would reimburse for residential treatment and the patient met ASAM criteria for residential treatment, treatment providers were not willing to place them in IOP treatment as a part of randomization.

This study was designed primarily in order to study the effectiveness of differing levels of treatment. The study *was not* designed to show the efficacy of these various treatment levels. In order to conduct the research at the clinical site, it was necessary to sacrifice the control one would have in conducting an efficacy study and has resulted in no random assignment. In an attempt to provide some randomization, participants were randomly selected from an available pool of 132 clients.

Dependent Variables

Demographic Information

Demographic data were gathered by the intake worker through the completion of the Center for Substance Abuse Services Data System (see Appendix C). This is a form

which is completed for all participants in treatment at Gateway Recovery Services. Data relevant to the current study were reported, including: age, age at first drug or alcohol use, arrest history, drug of choice, education, employment, ethnicity, gender, current income, insurance provider, legal involvement, previous treatment attempts, attendance at AA or NA, and marital status. All participants were informed that this data would be used for the purposes of this study.

Intake, Ten Day, Thirty Day, and Sixty Day Evaluations

The evaluations utilized in this study (see Appendices B, D, and E) address three of the six problem areas classified in the ASAM criteria: treatment acceptance/resistance, relapse potential, and recovery environment. The questionnaires were devised by the authors in consultation with five certified addictions counselors. Questions were submitted by the authors to the counselors and the measures were refined to reflect the recommendations of the treatment providers. The finalized questionnaires were agreed to reflect the essential criteria to assess each of the areas under investigation by all five counselors and the authors. The questionnaires also include questions from four subscales of the Addiction Severity Index (Medical, Drug/Alcohol Use, Psychiatric Status and Employment Status) as constructed by McLellan et al. (ASI, 1980).

The ASI is composed of both interviewer severity ratings and composite scores. The interviewer rating items have not been included in the evaluations used in this study, but items necessary to obtain composite scores for the subscales used have been included. The ASI composite score is based upon the sum of several of the individual information

questions within each of the subscales. Each composite is adjusted for the answer range of each item and for the total number of items in the composite. This is accomplished through mathematical steps (see Appendix G). Composite scores for each of the other areas under investigation were arrived at utilizing a similar method (see Appendix H). Evidence for the reliability and validity of the ASI has been presented in numerous publications (Alterman et al., 1994; Alterman et al., 1998; Kosten et al., 1983; McLellan et al., 1980, 1985).

Intake Questionnaire. The intake evaluation (see Appendix B) is a 40 item questionnaire which addresses the following areas:

1. Medical status (Questions 1-6) - 6 questions
2. Employment status (Questions 38-40) - 3 questions
3. Drug/alcohol use (Questions 7-13) - 7 questions
4. Psychiatric status (Questions 18-27) - 10 questions
5. Denial (Questions 14-17) - 4 questions
6. Participation in AA or NA (Questions 28-29, 35) - 3 questions
7. Relapse prevention strategies (Questions 30-34) - 5 questions
8. Social support system (Questions 36-37) - 2 questions

Ten Day Follow-up. The intake assessment has been modified to evaluate outcome at 10 days (See Appendix D). The 10 day follow-up assessment consists of 30 questions and addresses the following areas:

1. Medical status (Questions 1-5) - 5 questions
2. Drug/alcohol use (Question 24) - 1 question
3. Psychiatric status (Questions 18-19) - 2 questions
4. Denial (Questions 6-11) - 6 questions
5. Participation in AA or NA (Questions 13, 17, 22, 30) - 4 questions
6. Relapse prevention strategies (Questions 14-16, 20-21) - 5 questions
7. Social support system (Questions 12, 23) - 2 questions
8. General treatment acceptance (Questions 25-29) - 5 questions

Thirty and Sixty Day Follow-up. The intake assessment has also been modified in order to assess outcome at 30 and 60 days (See Appendix E). The follow-up assessment consists of 43 questions and addresses the following areas:

1. Medical status (Questions 1-5) - 5 questions
2. Employment status (Questions 40-42) - 3 questions
3. Drug/alcohol use (Questions 6-12, 37-38, plus use chart) - 8 questions
4. Psychiatric status (Questions 17-26) - 10 questions
5. Denial (Questions 13-16) - 4 questions
6. Participation in AA or NA (Questions 27, 29, 35, 39) - 4 questions
7. Relapse prevention strategies (Questions 30-34) - 5 questions
8. Social support system (Questions 28, 36) - 2 questions

Procedure

Participants were asked to complete the informed consent form and intake evaluation at the time of intake. Following intake, treatment was provided by one of five certified addictions counselors (CAC-I) at the level of residential or IOP placement. The treatment protocol implemented in this study did not differ from that used on a daily basis at Gateway Recovery Services.

The treatment program consists of daily group therapy, daily education sessions (including both videos and lectures) focusing on the biopsychosocial aspects of addiction, the 12 steps, relapse prevention, and weekly individual counseling. Residential clients participate in all activities on a daily basis, as well as being required to attend nightly AA and NA meetings. Clients in IOP treatment attend 3 hours of treatment per day for at least 9 hours per week, typically 12 hours per week. IOP clients attend primarily didactic presentations and group therapy, with AA/NA attendance highly recommended (see Table 1).

All participants were evaluated with the 10 day outcome assessment at the completion of 10 days of treatment; this includes 10 days of residential treatment or 10 treatment days of IOP treatment. A "treatment day" would be a day within which the subject participated in structured treatment at Gateway; therefore, days when the subject was not at Gateway (e.g., a weekend) would be excluded. Subjects were re-evaluated again at 30 days and once more at 60 days, following the 10 day follow-up.

Table 1

Comparing Service at Different Treatment Levels

Service	Treatment Level	
	Residential	IOP
Hours per day	24	3
Hours per week	Variable	9 or more
AA/NA Participation	Required	Recommended
Acupuncture	Offered	Not offered
Relaxation Therapy	Offered	Not offered
Didactic Session	Required	Required
Group Treatment	Required	Required
Individual Treatment	Required (once weekly or as needed)	Required (once weekly)
Relapse Prevention Group	Required	Recommended

Initial and 10 day follow-up evaluations were completed on-site at Gateway Recovery. In order to gather follow-up data at 30 and 60 days, the treatment outcome assessment was mailed to all participants at approximately 20 and 50 days after completion of the 10 day assessment. The participant was provided with a self-addressed stamped envelope in order to return the assessment. Participants were also informed that upon receiving the completed assessment they would be mailed a gift certificate good at a local business.

Human Subjects Protection

All information collected from participants has been treated in accordance with the ethical standards of the American Psychological Association (APA, 1982, 1992). Data were collected and are being stored in a confidential manner. Additionally, informed consent for participants was obtained (see Appendix A). Results are reported in a group format so that no individual can be identified.

There were no direct benefits to the participants beyond that which they would receive from participating in treatment at Gateway Recovery Services. However, they were informed of the contribution that their participation makes to ensuring the most effective treatment for future recipients.

The primary potential risk for participants was the added duress of completing the assessment on four separate occasions. However, they were informed that they could terminate participation at any time without penalty.

Only Human Subjects Institutional Review Board approved methods were implemented throughout the course of the study (See Appendix F).

RESULTS

Results are presented in six main sections. First, descriptive data related to demographic characteristics and intake data, as well as analyses between groups on demographic data and intake data are presented. Second, participants who completed 30 day and 60 day assessments are compared with participants who did not. Third, groups are compared on dependent measures at 10 day, 30 day, and 60 day assessments. Fourth, overall relapse levels at 10 day, 30 day, and 60 day assessments are discussed. Fifth, participants who participated in aftercare are compared with those participants who did not. Finally, the overall cost of treatment is discussed. An alpha level of .05 was used for all statistical analyses.

Baseline Data

Baseline data are available from two sources. First, basic demographic data are available for 47 of the 48 participants in the study. Second, baseline measures are available from the intake assessment on all 48 participants.

Demographic Characteristics

Demographic data were available for 47 of the 48 total participants and are summarized in Table 2.

Table 2

Demographic Data

Variables	Total	Alcohol Participants		Cocaine Participants		ANOVA
	(N=47)	IOP (N=12)	Res (N=12)	IOP (N=11)	Res (N=12)	F
AA/NA attend (% attending)	36.2%	35%	22%	46%	36%	ns
Age (years)	34.5	34.3	35.1	33.6	35.5	ns
Age at first use (years)	20.5	17.4	19.3	21	25	.07
Gender (% male)	66	85.7	66.7	46.2	63.6	ns
Arrests 6 mos (# times)	.49	.5	.33	.46	.63	ns
Arrests 5 years (# times)	1.76	2.14	1.33	1	2.5	ns
Education (yrs)	12.04	11.6	12.5	11.7	12.45	ns
Ethnicity (%white)	72.3%	92.9	88.9	53.8	54.5	ns
Employment (%full-time)	29.8	42.9	11.1	23.1	36.4	ns
Income (yr)	10727	12996	10000	9048	10420	ns
Insurance (%public fund)	57.4	42.9	55.6	61.5	72.7	ns
Marital (%currently married)	31.9	35.7	33.3	30.8	27.3	ns
Days used in past 30	10.4	6.7	14.6	9.15	13.27	ns
Public Asst (% receiving)	12.8	14.3	0	30.8	0	.08
Previous treatment (% having received)	23%	21%	11%	30%	27%	ns

The mean age of all participants was 34.5 years, with a range from 18 to 51 years. The majority of participants were Caucasian (72.3%); 25.5% were African-American. Sixty-six percent (66%) of participants were male; 34% were female. Slightly more than half of the participants (53.2%) had completed high school or received their GED; 23.4% had quit school prior to graduating and 23.4% of participants had some education beyond high school. Only 4.3% of participants were currently enrolled in higher education. Thirty-two percent (31.9%) of participants were married; 21.3% were divorced.

Thirty percent (29.8%) of participants were currently employed full-time; 14.9% were working part-time; and just over fifty percent of participants (51.1%) were unemployed. The mean salary was \$10,727 per year; modal salary was \$1000 per year. The majority of participants' treatment funding was provided by public funding (57.4%); only 14.9% had their own insurance. Thirteen percent (12.8%) of participants were currently homeless.

The mean age of first drug or alcohol use was 20.5 years. The mean number of days drugs or alcohol had been used in the past thirty was 10.4. Forty-three percent of participants (42.6%) had a history of abusing a secondary drug, in addition to their primary drug of abuse. These secondary drugs were overwhelmingly alcohol (23.4%) and marijuana (12.8%). Six percent (6.4%) of participants had a history of injecting drugs. A little over one-third of participants (36.2%) had attended a 12-step recovery group within the previous thirty days. Twenty-three percent (23.4%) of participants had been treated previously for chemical dependence.

Thirty-two percent (31.9%) of participants had been arrested once in the past six

months; 8.5% had been arrested twice in the past six months. Of those participants charged with an alcohol or drug related crime (N=12) in the previous six months, 66.6% were charged with driving under the influence (DUI), 33.3% with possession or sale of an illegal substance.

Thirty-two percent (31.9%) of participants had been arrested once in the past five years; 10.6% twice in the past five years; and 17% three times in the past five years. Twenty-five percent (25.5%) of participants had received a DUI in the past five years; 19.1% had been charged with possession or sale of an illegal substance over the previous five years; 4.2% had been charged with this crime more than once in the previous five years. Thirty-percent (29.8%) of participants were currently on probation; 10.6% were on parole; 17% were placed in a diversion program; and 6.4% were awaiting sentencing.

A one-way analysis of variance was used to compare the residential/alcohol, IOP/alcohol, residential/cocaine, and IOP/cocaine groups on demographic data. Analysis resulted in no significant differences in demographic characteristics among the four groups. However, a trend toward significance was noted on the variable of age at first drug use, $F(3,44) = 2.51, p=.07$. Post-hoc analyses using a Tukey test reveal that the residential/cocaine group started using drugs at a significantly later age than did the other groups (age 25), with the IOP/alcohol group starting at the youngest age (age 17).

Intake Assessment

All 48 participants completed the intake assessment. A one-way analysis of variance was used to compare data from the intake assessment across groups on the

following variables: alcohol use, drug use, medical status, psychiatric status, employment status, denial, participation in AA/NA, relapse prevention, and social support. Significant between group differences were found only for the following variables: use of alcohol, $F(3, 45) = 9.72, p=.001$, and use of drugs, $F(3, 45) = 10.6, p=.001$. Post-hoc analysis using a Tukey test reveal that the residential/alcohol group had a significantly greater problem with alcohol use than did the IOP/alcohol, IOP/cocaine, and residential/cocaine groups. Post-hoc analysis also indicates that the residential/cocaine group had a greater problem with drug use than did the residential/alcohol group and the IOP/alcohol group; however, the difference between residential/cocaine and IOP/cocaine was not significant. The IOP/cocaine group had a significantly greater problem with drug use than did the IOP/alcohol group.

Completers Versus Non-completers

All of the participants completed the initial 10 day treatment protocol and the intake and 10 day assessment. Two-thirds (66.7%) of the overall sample ($N = 32$) completed the 30 day follow-up assessment and 41.7% of the overall sample ($N = 20$) completed the 60-day follow-up. Thus, the attrition rate for the 30-day follow-up was 33.3% and for the 60 day follow up it was 58.3%.

Descriptive Measures for Completers Versus Non-completers

At 30 day follow-up, data were provided by 32 participants; 16 participants did not provide follow-up data. Multiple ANOVAs were conducted to assess for the

possibility of differences between completers and non-completers at 30 day follow-up. Analysis revealed no significant differences between participants who completed the 30 day follow-up and those who did not on the following variables: age, age of first use, use of denial, education, employment status, marital status, history of previous treatment, sex, and arrest history.

At 60 day follow-up, data were provided by 20 participants; 28 participants did not provide follow-up data. As at 30 day follow-up, multiple ANOVAs were conducted to assess for the differences between completers and non-completers. Analysis revealed no significant differences between participants who completed the 60 day follow-up and those who did not on the following variables: age, age of first use, use of denial, education, employment status, marital status, history of previous treatment, sex, and arrest history.

These results on completion versus non-completion held true when multiple logistic regression analyses were conducted. Additionally, treatment intensity (i.e., residential or intensive outpatient) was not found to be predictive of completion or non-completion using a logistic regression analysis.

Overall, the inpatient group was no more likely than the IOP group to complete either the 30-day (66.7% completion for both groups) or the 60-day (41.7% completion for both groups) follow-up assessment. The alcohol dependent group was slightly more likely to complete the 30-day follow-up than was the cocaine dependent group, though this difference is not statistically significant (70.8% vs. 62.5% completion). There was no difference between the cocaine and alcohol dependent groups completion rate for the

60-day follow-up (41.47% for both groups).

Follow-up

Mean composite scores on the scales of alcohol use, drug use, medical status, psychiatric status, employment status, denial, relapse prevention, participation in AA/NA, social support and current level of step completion at intake, 10 day, 30 day, and 60 day assessments for the cocaine dependent and alcohol dependent groups are presented in Tables 3 and 4. Tables 5, 6, and 7 show the improvement in mean composite scores between intake and 10 days, 30 days, and 60 days, respectively.

Ten-day Follow-up

Ten day assessment data were available for all participants. Data comparing intake and 10 day follow-up on the scales of alcohol use, drug use, medical status, psychiatric status, denial, relapse prevention skills, participation in AA/NA, and social support were analyzed using multiple repeated measures ANOVAs (see Table 5). Significant improvement from baseline to ten day follow-up was evident for all groups in the areas of alcohol use, $F(1, 45) = 13.79, p = .001$; drug use, $F(1, 45) = 33.60, p = .001$; denial, $F(1, 45) = 5.67, p = .004$; relapse prevention, $F(1, 45) = 59.86, p = .001$; and participation in AA/NA, $F(1, 45) = 15.61, p = .001$. Significant improvement was not evident for medical status, psychiatric status, or available social support.

Table 3

Mean Composite Scores for Cocaine Dependent Participants at Intake, 10 Day, 30 Day, and 60 Day Assessment

	Intake		10 Day		30 Day		60 Day	
Scale	Res	IOP	Res	IOP	Res	IOP	Res	IOP
ASI-Alc	.24	.12	.21	.12	.15	.04	.11	0
ASI-Drug	.52	.41	.31	.29	.17	.12	.12	.15
ASI-Med	.20	.34	.20	.30	.23	.22	.22	.32
ASI-Psy	.35	.25	.24	.20	.28	.15	.15	.20
ASI-Emp	.65	.60	n/a	n/a	.50	.60	.46	.71
Accept	.16	.15	.06	.10	.05	.20	.07	.23
Denial	.17	.17	.05	.14	.04	.15	.05	.18
RlpsPrev	.54	.37	.29	.24	.41	.33	.41	.41
AA/NA	.74	.64	.54	.65	.27	.61	.43	.69
Soc Suppt	.14	.16	.21	.22	.23	.26	.30	.18
Step	0	0	2.3	2.4	2.6	2	3.2	3

Differential group improvement (interaction effects) was evident for several variables. All groups showed very modest improvement in alcohol use (including the IOP/alcohol group), except the residential/alcohol group, which showed significant improvement, $F(3, 45) = 7.57, p = .001$. While all groups showed some improvement in drug use, the IOP/alcohol group did not, $F(3, 45) = 7.42, p = .001$. Interestingly, all groups showed some improvement in psychiatric status, barring the residential/alcohol

group whose ASI score was *worse* at 10 day follow-up, $F(3, 45) = 3.75$, $p = .017$. In the area of relapse prevention skills, all groups showed significant improvement, except for the IOP/alcohol group which did not, $F(3, 45) = 3.58$, $p = .021$. Finally, all groups showed significant improvement in AA attendance except the IOP/cocaine group which showed very modest improvement, $F(3, 45) = 3.01$, $p = .039$.

Table 4

Mean Composite Scores for Alcohol Dependent Participants at Intake, 10 Day, 30 Day, and 60 Day Assessment

	Intake		10 Day		30 Day		60 Day	
Scale	Res	IOP	Res	IOP	Res	IOP	Res	IOP
ASI-Alc	.58	.33	.38	.31	.14	.20	.07	.16
ASI-Drug	.28	.09	.15	.12	.03	.04	.02	.05
ASI-Med	.35	.23	.43	.23	.32	.12	.17	.04
ASI-Psy	.37	.27	.52	.23	.26	.05	.22	.03
ASI-Emp	.58	.72	n/a	n/a	.49	.37	.41	.79
Accept	.10	.32	.11	.27	.16	.43	.17	.35
Denial	.12	.33	.11	.29	.12	.46	.18	.50
RlpsPrev	.45	.37	.18	.28	.28	.35	.23	.40
AA/NA	.83	.66	.51	.56	.36	.60	.65	.78
Soc Suppt	.14	.10	.12	.16	.16	.28	.17	.23
Step	0	0	2.4	2.6	1.8	1.4	2.4	.8

Table 5

Mean Improvement in Composite Scores From Intake to 10 Day Follow-Up,
Repeated Measures ANOVA

Scale	Mean Change		Mean Change		F	F-Interaction
	Res/Coke	Res/Alc	IOP/Coke	IOP/Alc		
ASI-Alc	.03	.20*	0	.02	.001	.000
ASI-Drg	.21	.13	.12	-.03*	.000	.000
ASI-Med	0	-.08	.04	0	ns	ns
ASI-Psy	.11	-.15*	.05	.04	ns	.017
ASI-Emp	n/a	n/a	n/a	n/a	n/a	n/a
Denial	.12	.01	.03	.04	.004	ns
RlpsPrev	.25	.27	.13	.09*	.000	.021
AA/NA	.20	.32	.01*	.10	.000	.039
Soc Suppt	-.07	.02	-.01	-.06	ns	ns

*Indicates group contributing to significant interaction effect.

Thirty-Day Follow-up

Thirty-day follow-up assessment data were available for 32 participants. Data comparing intake, 10 day follow-up, and 30-day follow-up on scales of alcohol use, drug use, medical status, psychiatric status, employment status, denial, relapse prevention, participation in AA/NA, social support, and completion of the 12 steps of AA were analyzed using multiple repeated measures ANOVAs (see Table 6). Significant improvement from baseline to thirty day follow-up was evident for all groups for the following variables: alcohol use, $F(2, 56) = 15.27$, $p = .001$, drug use, $F(2, 56) = 30.11$, $p < .001$, psychiatric status, $F(2, 56) = 7.28$, $p = .002$, employment status, $F(1, 28) =$

4.80, $p = .037$, relapse prevention skills, $F(2, 56) = 15.23$, $p = .001$, and participation in AA/NA, $F(2, 56) = 11.75$, $p = .001$. Significant improvement was not evident for medical status, denial, social support, and completion of the 12 steps.

Table 6

Mean Improvement in Composite Scores From Intake to 30 Day Follow-Up,
Repeated Measures ANOVA

Scale	Mean Change		Mean Change		F	F-Interaction
	Res/Coke	Res/Alc	IOP/Coke	IOP/Alc		
ASI-Alc	.10	.50*	.08	.094	.000	.001
ASI-Drg	.30	.18	.25	.08*	.000	.073**
ASI-Med	.02	.08	.08	.0	ns	ns
ASI-Psy	.12	.14	0*	.17	.002	.002
ASI-Emp	.23	.12	.04	-.02	.037	ns
Denial	.06	.04	.04	0	ns	ns
RlpsPrev	.15	.18	.03	.03	.000	ns
AA/NA	.47	.47	.03*	.06*	.000	.026
Soc Suppt	-.02	0	-.06	-.20	ns	ns

*Indicates group contributing to significant interaction effect.

**Indicates trend toward significance.

Interaction effects were apparent for three variables: alcohol use, psychiatric status, and participation in AA/NA. Additionally, a trend was apparent for an interaction effect for drug use. In the area of alcohol use, while all groups showed some improvement, the residential/alcohol group showed significantly greater improvement than any other group, $F(6, 56) = 4.25$, $p = .001$. Psychiatric status improved for all groups

except the IOP/cocaine group, which showed no improvement, $F(6, 56) = 4.09, p = .002$. Both of the residential treatment groups (residential/cocaine and residential/alcohol) had significantly greater participation than did either of the IOP groups (IOP/cocaine and IOP/alcohol; $F(6, 56) = 4.09, p = .026$). For drug use, all groups showed significant improvement, barring the IOP/alcohol group, which showed only a modest improvement, resulting in a trend toward significance, $F(6, 56) = 2.06, p = .073$.

Table 7

Mean Improvement in Composite Scores From Intake to 60 Day Follow-Up,
Repeated Measures ANOVA

Scale	Mean Change		Mean Change		F	F-Interaction
	Res/Coke	Res/Alc	IOP/Coke	IOP/Alc		
ASI-Alc	.04	.65*	.11	.04	.028	.005
ASI-Drg	.28	.07	.19	.11	.000	ns
ASI-Med	.03	.10	.09	.07	ns	ns
ASI-Psy	.23*	.09	.01	.24*	.001	.011
ASI-Emp	.23	.13	.04	-.01	.033	ns
Denial	.04	.03	.02	-.05	ns	ns
RlpsPrev	.10	.22	-.10	0	.011	ns
AA/NA	.36	.12	-.12	-.03	.001	ns
Soc Suppt	.02	.16	-.11	-.18	ns	ns

*Indicates group contributing to significant interaction effect.

Sixty-Day Follow-up

Sixty-day follow-up assessment data were available for 20 participants. Data

comparing intake, 10 day follow-up, 30-day follow-up, and 60-day follow-up on the scales of alcohol use, drug use, medical status, psychiatric status, employment status, denial, relapse prevention, participation in AA/NA, social support, and completion of the 12 steps of AA were analyzed using multiple repeated measures ANOVAs (see Table 7). Significant improvement from baseline to sixty-day follow-up was evident for all groups for the following variables: alcohol use, $F(3, 48) = 11.78, p = .028$, drug use, $F(3, 48) = 15.72, p = .001$; psychiatric status, $F(3, 48) = 6.18, p = .001$; employment, $F(2, 32) = 3.81, p = .033$; relapse prevention skills, $F(3, 48) = 4.16, p = .011$; and participation in AA/NA, $F(3, 48) = 6.61, p = .001$. Significant improvement was not evident for the following variables: medical status, denial, and social support. Interaction effects were apparent in two areas: alcohol use and psychiatric status. The residential/alcohol group showed significantly greater improvement than did any other group, $F(9, 48) = 4.57, p = .005$. The residential/cocaine and IOP/alcohol groups showed significantly more improvement in psychiatric status than did the residential/alcohol and IOP/cocaine groups, $F(9, 48) = 2.75, p = .011$.

Overall Abstinence

Chi-square analyses were used to compare residential and intensive outpatient groups in terms of total abstinence from alcohol and drugs since treatment. The residential group had a statistically significant higher rate of total abstinence (91.7%) than the IOP group (41.7%) at 10 days, $\chi^2(1, N = 48) = 8.42, p = .003$, but the difference at 30 days and 60 days was no longer statistically significant (see Table 8).

Table 8

Percent of Participants Having Relapsed at Each Follow-Up

Group	N*	10 Day	N*	30 Day	N*	60 Day
Res/Cocaine	12	8.3	8	33.3	5	8.3
Res/Alcohol	12	8.3	8	16.7	5	16.7
IOP/Cocaine	12	50	7	41.7	5	33.3
IOP/Alcohol	12	50	9	35.7	5	21.4
Total	48	50	32	38.5	20	26.9

* Total sample size for each group at each follow-up point

These results on total abstinence held true when multiple logistic regression analyses were conducted to control for intake level of drug and alcohol use and subsequent treatment. At 10 days, as treatment intensity decreased (i.e., from residential to IOP), the likelihood of relapse increased, $-2LL = 49.8$, $p = .0041$. However, treatment intensity was no longer predictive of relapse at 30 or 60-day follow-up.

Chi-square analyses were also used to compare groups by diagnosis on total abstinence from alcohol and drugs since treatment. There were no statistically significant differences in relapse rate between alcohol dependent and cocaine dependent groups at any follow-up period (see Table 9). Multiple logistic regression analyses also indicated that diagnosis was not predictive of relapse at 10, 30 or 60 days.

When groups were analyzed with a logistic regression as a whole (i.e., regardless of diagnosis or level of placement) the following information was revealed. At 10 days, no variables were predictive of relapse except denial, with higher composite scores on

denial predicting higher levels of relapse, $-2LL = 55.28$, $p = .024$. At 30 days, attendance at AA or NA was predictive of relapse with less attendance predicting higher relapse rates $-2LL = 26.34$, $p = .000$; other variables were not predictive. Finally, at 60 days, no variables were predictive of relapse.

Table 9

Percentage of Cocaine and Alcohol Dependent Participants Having Relapsed at Each Follow Up Point

Follow Up	Cocaine Dependent		Alcohol Dependent		Chi Square	
	(% relapsed)	N	(% relapsed)	N	X ²	p
10 Day	29.2	12	30.8	12	.015	ns
30 Day	37.5	15	26.9	17	1.12	ns
60 Day	20.8	10	19.2	10	.000	ns

Aftercare Participation

For the following discussion, outpatient treatment is defined as involving individual counseling with participation in up to one formal group per week. Table 10 shows the percentage of participants from the residential and IOP groups engaged in aftercare at 30 and 60 days. Half of the residential group (54.2%) completing the 30-day follow-up assessment participated in outpatient treatment following their residential treatment. Only 27% of the IOP group participated in outpatient treatment following their IOP treatment. Chi-square analysis revealed that this difference is not statistically significant. Logistic regression analysis also revealed that treatment intensity is not

predictive of participation in aftercare at 30 days.

Table 10

Percentage of Residential and IOP Participants Participating in Aftercare at 30 and 60 Day Follow-Up

	30 Days			60 Days			ANOVA
	Total	OP	IOP	Total	OP	IOP	F
Residential	54.2	37.5	16.7	16.7	16.7	0	ns
IOP	26.9	23.1	3.8	15.4	15.4	0	ns

Approximately seventeen percent (16.7%) of the residential group completing the 60-day follow-up assessment continued to be involved in outpatient counseling. Fifteen percent of the IOP group continued to be involved in outpatient counseling at 60 days. Chi-square analysis reveals that this difference is not statistically significant. Logistic regression analysis also indicates that treatment intensity is not predictive of participation in aftercare at 60 days.

Examination at the level of diagnosis reveals that of those participants with a diagnosis of cocaine dependence who completed the 30-day evaluation, 41.7% were attending outpatient counseling following their initial treatment. For alcohol dependent participants, 45.8% reported outpatient counseling at 30 days. This difference is not statistically significant when analyzed with a chi-square analysis. Logistic regression analysis also reveals that diagnosis is not predictive of participation in after care at 30 days.

At 60-day follow-up, 20.8% of cocaine dependent participants reported ongoing

outpatient counseling, while 16.7% of alcohol dependent participants reported participation in outpatient counseling. Again, these differences are not statistically significant when analyzed using a chi-square analysis. Logistic regression analysis also reveals that diagnosis is not predictive of participation in after care at 60 days.

Finally, logistic regression analysis revealed a trend toward significance when examining participation in aftercare at 30 days as an overall predictor of relapse at 30 days, regardless of treatment group $-2LL = 4$, $p = .078$. At 30 days, as participation in aftercare decreased, the likelihood of relapse increased. However, logistic regression examining participation in aftercare at 60 days as an overall predictor of relapse at 60 days was not significant and revealed no trend toward significance.

Comparing the Cost of Treatment

The cost of a day of residential treatment at the facility at which this study was conducted was \$380.00, whereas a day of IOP treatment was \$130.00. Thus, 10 days of residential treatment totals \$3800.00, compared to \$1300.00 for 10 days of IOP treatment. These totals can be assumed for all participants. However, overall aftercare increases the cost of treatment. A residential client who continues to be engaged in IOP treatment at 30 days averages a cost of \$4970.00; a residential client who continues to be engaged in outpatient treatment would average approximately \$4320.00. In contrast, an IOP client who continues to be engaged in IOP at 30 days would average a cost of approximately \$2470.00; an IOP client who continues to be engaged in outpatient treatment would average approximately \$1820.00. At 60 days, the cost of a residential

client who continues to be involved in IOP treatment increases to \$6530.00; in outpatient to \$4840.00. The IOP client who remains involved in IOP treatment at 60 days has amassed an average cost of \$3030.00, in outpatient \$2340.00.

DISCUSSION

The discussion is presented in 5 main sections. First, a brief summary of the findings of this study are discussed. Second, broad treatment effects and an evaluation of the primary hypothesis are addressed. Third, the results and method of the current study are compared with those of published research. Fourth, the implications of the current findings are discussed. Finally, benefits, limitations and future directions of the research are explored.

Summary

The purpose of this study was to investigate the effectiveness of treatment for alcohol and cocaine dependence at the residential and intensive outpatient levels of treatment. Additionally, the study was designed to compare effectiveness of the residential and intensive outpatient levels of treatments for an alcohol dependent group and a cocaine dependent group. Overall, the results of this study indicate that both residential and IOP treatments are effective in treating alcohol and cocaine dependence. During the course of the study both residential and IOP participants, regardless of diagnosis, showed comparable improvement in use of drugs, denial, relapse prevention skills and employment status. Further, the results support the use of IOP treatment as a viable alternative to residential treatment for alcohol dependent and cocaine dependent

patients at a cost of roughly one-third that of residential placement.

Broad Treatment Effects

Despite the fact that random selection was used in this study, rather than random assignment, there were no significant differences between groups on any demographic measure. Additionally, data analysis of intake data revealed only that alcohol dependent participants entering residential treatment had an initially greater problem with alcohol than did alcohol dependent participants entering IOP treatment.

Participants in both the residential and intensive outpatient treatment groups, regardless of diagnosis, achieved highly significant reductions in ASI composite scores at 10 day, 30 day, and 60 day follow-up. Improvement in problem areas demonstrate that both residential and IOP treatment are effective.

Immediately following 10 days of treatment, individuals in all groups showed improvement in the areas of participation in AA/NA, alcohol use, drug use, denial, and relapse prevention. However, at 10 days significant improvement was not evident for medical status, psychiatric status, and available social support. The lack of improvement in these areas is not entirely surprising. With regard to medical status and psychiatric status, neither of these areas serve as a primary treatment focus in chemical dependence treatment. Additionally, ten days is a short period of time to expect great improvement in such significant areas. This can also be said of social support. Social support is typically something that is built up over time, typically in settings outside of treatment, and is unlikely to manifest itself after only ten days of treatment.

At ten days after beginning treatment, the residential/alcohol group showed significantly more improvement in alcohol use than did any other group, including the IOP/alcohol group, a finding which persisted at 30 day and 60 day follow-up. The greater improvement may be directly attributable to the fact that the residential/alcohol group had a greater problem with alcohol to begin with and, therefore, possessed the capacity for greater improvement.

Additionally at the 10 day assessment the residential/alcohol group showed a worsening of psychiatric symptoms. One would assume that all groups experienced similar psychological distress related to their abstinence and it is unclear as to why the residential/alcohol group would have greater distress.

The IOP/alcohol group failed to demonstrate significant improvement at the 10-day assessment on the relapse prevention skills variable. Relapse prevention skills are thought to enable the individual to effectively cope with triggers and urges in order to avoid relapse. Despite the failure of the IOP/alcohol group to demonstrate improvement in this area, later follow-up did not indicate greater relapse rates for the IOP/alcohol group.

The IOP/cocaine group failed to show improvement in AA/NA attendance at 10 days. Failure to participate in AA or NA has also been thought to be a predictor of relapse. However, again, later analyses do not indicate greater relapse rates for the IOP/cocaine group.

Additionally at 10 days it was found that the residential groups had significantly higher abstinence rates than did the IOP groups. While this is a significant difference, it

is not a surprising one. If one considers the nature of residential treatment, wherein the treatment recipient is in the treatment setting 24 hours a day, it becomes obvious that opportunities for drug or alcohol use are limited. However, in the IOP setting one is in his or her typical environment for 21 hours per day, and in treatment only three, and then only approximately 3 times per week, thus vastly increasing the opportunity for relapse. Perhaps the more important finding is that these differences in total abstinence rate no longer held true at the 30 day and 60 day assessments which indicates that, at least 60 days after treatment, abstinence rates do not differ regardless of treatment level.

At the 30 day assessment, significant improvement continued to be present in the areas of participation in AA/NA, alcohol use, drug use, and relapse prevention skills. Additionally, psychiatric and employment status showed improvement at this assessment point. Significant improvement was not found in the areas of medical status, denial, social support, and completion of the Twelve Steps.

Psychiatric status does demonstrate improvement at 30 day follow-up, which may be associated with the increased stability of abstinent life, in contrast to the turmoil associated with addiction.

Failure to show significant improvement in completion of the Twelve Steps of AA/NA is also not surprising in that these programs encourage the participant to “work” the steps in a slow and thorough manner. Thus, an individual begins at Step One and slowly progresses through the twelve steps.

The failure of social support to demonstrate improvement at both 30 and 60 days is troubling in that relapse has long been considered to increase when individuals lack a

supportive environment. This issue will be discussed further below.

At sixty day follow-up, significant improvement remains present in the areas of participation in AA/NA, alcohol use, drug use, psychiatric status, employment status, and relapse prevention. Medical status, denial and social support fail to show improvement at this assessment as well.

The lack of improvement in denial and social support at 60 days is disconcerting. As has been previously mentioned, it has long been an assumption in the field of chemical dependence treatment that lack of a supportive environment and denial of an existing problem contribute to relapse. The finding that, with treatment, these variables do not improve at 60 days increases the need for research investigating longer periods of follow-up.

Many would argue that the true measure of treatment success is abstinence. While abstinence cannot be the only measure of improvement, it certainly is an important one. An average of thirty percent (29.8%) of participants in this study had relapsed at 10 day follow-up. By thirty-day follow-up, approximately thirty-two (31.9%) percent of the participants completing the follow up had relapsed. Finally, at sixty-day follow up, nearly twenty percent (19.7%) of those completing the assessment had relapsed.

Of course, common sense dictates that more than thirty-two and twenty percent of participants had relapsed at thirty and sixty days, respectively. It would be absurd to assume that none of those individuals failing to respond to the follow up had relapsed. In fact, it is much more likely that these non-completers did, in fact, relapse. If the worst case scenario is considered, wherein all non-responders had relapsed, the relapse rate at

30 days becomes 64.2% and at 60 days 78%. Admittedly this is an unscientific analysis and is certainly a conservative estimate in favor of relapse. However, the results are likely more representative of relapse rates than those available in this study. These are disheartening statistics with regard to chemical dependence treatment in general, however they do not alter the fact that relapse rates were not significantly different between IOP and residential groups. While chemical dependence treatment in general may be less than 25% effective, it may still be the case that IOP treatment is just as effective, and unfortunately ineffective, as residential treatment.

It is important that when considering the effectiveness of treatment one does not limit consideration to relapse alone. While relapse may be the ultimate measure, the other variables investigated in this study are very important in their own right. As McLellan et al. (1997) state "even those patients who show abstinence from substance use following treatment - but continue to have unresolved employment, family, and/or psychiatric problems - are at significant risk for early relapse" (p. 81).

The primary hypothesis of this study was that there would be no significant differences for alcohol or cocaine dependent participants at any level of care on measures of drug/alcohol use, employment status, denial, 12 step participation, relapse prevention, medical status, psychiatric status, or social support. Although the residential/alcohol group demonstrated significantly more improvement in alcohol use over the course of the study, this is thought to be related to the fact that they had a significantly greater problem with alcohol to begin with. This is the only area in which one group showed consistent differential improvement across the three follow-up evaluations.

Integration of Findings With Existing Literature

Convergent Findings

This study investigated both cocaine and alcohol dependence. As results demonstrated no significant differences between these two groups on outcome, they will be discussed as a whole in comparison with previous research. It is important to recognize, however, that some of the studies discussed below addressed cocaine or alcohol dependence exclusively.

The results of the current study are consistent with previously published research in a number of areas. This study demonstrated significant improvement in outcome measures at both the residential (Alterman & McLellan, 1993; Longabaugh et al., 1983; Schneider, Mittelmeier, & Gaddish, 1996) and IOP treatment levels (Campbell et al., 1997; McLellan et al., 1997).

The effectiveness of IOP as a general treatment modality has been previously demonstrated (Campbell et al., 1997). Campbell et al. (1997) pointed out the need for effectiveness studies comparing IOP with inpatient treatment in order to determine whether or not more improvement occurs for individuals placed in inpatient treatment than does for individuals placed in IOP treatment. The results of the present study indicate that this does not occur, at least at the level of residential placement.

Literature review revealed only one other published study comparing IOP treatment with residential treatment for chemical dependence. That study, authored by

Harrison et al. (1988), did not define this level of treatment as “IOP”, but did describe it as involving 20 sessions of three hours each, which is consistent with IOP treatment. The results of the current study are consistent with the findings of Harrison et al. in revealing no significant difference in outcome between more and less intensive treatment settings.

The current study is also consistent with the findings of previous studies investigating IOP versus inpatient treatment for psychiatric conditions (Creed et al., 1990; Kiesler & Sibulkin, 1987) in finding that IOP is just as successful with regard to general treatment outcome as inpatient treatment.

Comparisons between the present study and other studies in the field of chemical dependence must be made at the level of day treatment versus inpatient treatment, as that is all that is currently available. Like previous studies, the results of this study indicate a statistically significant higher rate of abstinence for the residential groups at early follow-up, which disappeared at later follow-up (Schneider, Mittelmeier, & Gaddish, 1996). This finding supports the long standing assumption that outpatient treatment leaves patients more vulnerable to relapse by not removing them from environmental cues and triggers. However, the fact that relapse rates are not different after 30 and 60 days supports the concept that patients can benefit from being exposed to environmental cues and learning to cope with them during early recovery (Schneider, Mittelmeier, & Gaddish, 1996).

Divergent Findings

Unlike Campbell, Gabrielli, Laster and Liskow (1997), who investigated the efficacy of IOP placement and did not find improvement in the areas of alcohol use and

employment status, the current study revealed a significant improvement in both. While this is an important difference, it is also important to recognize the differences between the two studies, primarily length of follow-up. In the current study, at 60 day assessment, groups demonstrated a significant improvement in these scales. Campbell et al. followed up at 6-months and found no improvement. It is certainly possible that if the groups in this study were followed until 6 months that the significant findings would disappear.

Overall, the present study indicated much less participation in AA or NA at follow-up than have previous studies (Schneider, Mittelmeier, & Gaddish, 1996). While research related to the outcome of participation in these groups is rare, as they are often unwilling to comply with the strict requirements of formal outcome research (e.g. access to participants, identification of non-completers, accurate diagnosis, follow-up, etc. . .), it has long been assumed that AA is an effective treatment modality. For example, Tournier (1979) states that "in an area where documentable recoveries are rare, AA alone has appeared to succeed" (p. 230). With this type of reputation, participation in AA and NA may be a very important factor in preventing relapse. For this reason, relapse rates in this study may have been affected by the diminished participation in AA and NA.

As has previously been discussed, this study did not show significant improvement in medical status, a finding that is divergent from previous research findings (Alterman et al., 1994; Campbell et al., 1997; McLellan et al., 1997). One reason that medical status did not improve may be that, though there are medical problems that will improve with abstinence, there are also significant chronic medical conditions which are not likely to improve regardless of abstinence. Additionally, the number of responders at 60 days was

fairly small, with four reporting continued significant medical problems.

Contributions of Findings to the Literature

A primary contribution of the current study is the availability of data from a publicly-funded substance dependence treatment center that is obtained in a naturalistic manner. By utilizing a method of non-interference to study the treatment of a substance dependent population an opportunity becomes available to “see things as they really are” in a typical chemical dependence treatment setting. While the lack of random assignment can be considered a limitation of this study, several authors (e.g., Howard et al., 1990, Taylor et al., 1982) question the extent to which individuals randomly assigned to chemical dependence treatments are representative of the “real substance abuser.” Strohmetz, Alterman, and Walter (1990) suggest that there may be serious limitations to random assignment in chemical dependence treatment comparisons because those patients agreeing to randomization may differ from the population of interest.

Second, the differences between the sample population investigated in this study and those investigated by previous research are substantial, demonstrating the broad generalizability of the findings. For example several studies, especially those focusing on cocaine dependence, have investigated predominantly African-American male populations (Alterman, et al., 1994; Campbell, et al., 1997; Gottheil, et al., 1995; McKay et al., 1994). The sample in the present study was more diverse in terms of gender and race.

Third, the length of residential treatment investigated in this study is significantly shorter than that investigated in previous studies, as much as 18 days shorter for some

studies (e.g., Alterman and McLellan, 1993; Alterman, et al., 1994; McLachlan & Stein, 1982). Thus, the present data provides an evaluation of treatment efficacy for a length of stay consistent with the contemporary standard.

Additionally, the current study provides data at earlier follow-up periods, including immediately following treatment, which have not been previously available. McLellan et al. (1997) point out the need and importance of follow-up data at both periods earlier than and later than 6 months. The period immediately following treatment and the first few months following treatment are not typically thoroughly investigated. The typical protocol is intake and 6 month follow-up; the availability of data at 10 days, 30 days and 60 days provides information about time intervals that were previously unavailable. It may be helpful for future research to follow such a protocol while extending follow-up to 90 days, 6 months, 9 months, and one year.

Fourth, the current study contributes to the growing number of studies demonstrating the effectiveness of IOP treatment (e.g., Campbell et al., 1997; McLellan et al., 1997). The need for such data becomes increasingly important as the use of IOP treatment continues to rise.

Finally, this study represents one of the first investigating IOP treatment outcome compared with residential treatment outcome. Although there have been numerous studies investigating day treatment and inpatient treatment (e.g., Alterman & McLellan, 1993; Longabaugh, et al., 1983; McClachlan & Stein, 1981; Schneider, Mittelmeier, & Gadish, 1996), literature review has revealed only one published study comparing what appears to be an IOP treatment program with an inpatient program (Harrison et al.,

1988).

Implications

The number of studies indicating that inpatient or residential treatment is not superior to outpatient treatment increases yearly. The current study is one of few which indicates that IOP treatment is just as effective, at least as far as 60 days after beginning treatment, as residential treatment. The implications of such findings are numerous and will be discussed at three levels: theoretical, research, and applied implications.

Theoretical Implications

As was previously mentioned, it has long been an assumption in the field of chemical dependence treatment that more intensive, and more expensive, treatment was the most effective. Miller and Hester (1986) summarized the prevailing treatment attitude at the time of their study using the "3 R's model" of treatment: *remove* from society, *repair* the problem, and *replace* in society. They go on to further state that this model is "outmoded and inadequate" (p. 803). Research data indicate that the model is certainly outmoded and inadequate at present. However, more than a decade later, there are many who still subscribe to the "3 R's model." Such a theoretical foundation immediately weakens the viability of outpatient treatment as an effective treatment alternative.

Numerous studies have now demonstrated that outpatient treatment, albeit often more intensive day treatment, can be an effective alternative to inpatient or residential placement. This study has taken these findings a step further and demonstrated the

effectiveness of less intensive and less expensive outpatient treatment as an alternative to residential treatment.

Admittedly, there will always be a place for inpatient chemical dependence treatment as there are surely individuals who will respond to nothing less. However, the theoretical underpinnings of chemical dependence treatment must now begin to shift to the recognition that not all, possibly not even most, chemically dependent individuals require inpatient care.

This study also demonstrates that a general treatment approach can prove equally beneficial to both alcohol and cocaine dependent individuals, despite the distinct differences between the addiction process in each disorder. While the addiction process may differ significantly, perhaps the recovery process does not. It is possible that IOP treatment is not only the most practical treatment setting for cocaine dependence, but also the most effective for the simple reason that it provides opportunities to encounter relapse triggers and cues early in recovery. Such a treatment placement could also be effective for alcohol dependence for the same reason, because, although external stimuli appear to be more powerful in cocaine dependence, they certainly affect alcohol dependence as well.

Research Implications

The results of this study indicate the need for further research investigating IOP treatment in comparison with residential and inpatient care. An important area of investigation would be identifying those individuals who require inpatient care and those who would benefit equally from less intensive approaches. By further refining selection

criteria and treatment providers' ability to match to the most appropriate treatment level, providers can increase confidence that recipients are being provided the most effective treatment at the least cost.

Additionally, it is important to begin identifying those factors which contribute to successful treatment outcome. While studies such as this one demonstrate what does not contribute to such outcome, in this case treatment setting, they fail to demonstrate what does. Further research investigating participation in aftercare, participation in self-help groups, social support, and motivation for treatment and the ways that these variables contribute to treatment outcome would greatly benefit the field of chemical dependence.

This study demonstrated few differences in outcome between alcohol dependent and cocaine dependent participants. This is an area requiring further research due to the increasing number of individuals entering treatment who are addicted to "crack" cocaine. Research must answer the question "are there significant differences between alcohol and cocaine dependent individuals which must be addressed in treatment, or are the addictions similar enough to allow for a 'global' treatment?"

Practical Implications

Alcohol and cocaine dependent participants do improve when placed in residential care. Personal experience will attest to witnessing individuals improve at near miraculous rates while being treated at this level. Nonetheless, available data strongly call into question whether the improvement witnessed in residential or inpatient care requires the expense accompanying such placement. If future research supports the findings of the

current study, it is likely that more programs will begin offering IOP placement and less will offer inpatient placement. Undoubtedly this is likely to be one of the primary implications of such research. The change may occur with only modest research support, given the huge financial difference between the two treatment levels. Such findings are likely to gather quick support from managed care in an effort to reduce the cost of treatment expenditures.

Additionally, such findings could have a significant impact on the availability of treatment to uninsured individuals. With a cost of approximately one-third that of residential placement, sources of public funding would be able to pay for treatment for three individuals if placed in IOP, as opposed to only one in residential or inpatient treatment.

Another implication of the present research findings is that perhaps more individuals will begin considering substance dependence treatment. It is not difficult to understand the hardship that being removed from work, family and friends for two weeks to a month can place on a substance dependent individual. Admittedly, such a hardship is a small price for recovery; however, as any substance dependence treatment provider can attest, substance dependent individuals are not known for their ability to consider long term consequences. When effective treatment can be offered to an individual after work, or on the weekends, allowing him or her to return home to his or her family on a daily basis, it becomes more acceptable.

Limitations

This study has several limitations which should be considered when interpreting the results. First, the lack of random assignment makes this a quasi-experimental design. The lack of random assignment occurred for several reasons. A primary reason was related to the fact that clinic administrators questioned the acceptability of random assignment to patients and sources of funding. Greenfield (1989) supports the concept that ethical constraints and practical difficulties are very real obstacles to randomization in clinical research. The author goes on to state that "an exclusive reliance on randomized controlled trials to provide definitive information about effectiveness is not the answer" (p. 1142).

Second, a larger sample would strengthen the confidence that an absence of differences in outcome between residential and IOP treatment truly exists. Similar research investigating inpatient and day treatment have typically been conducted at facilities serving large numbers of patients as well as having both practical and financial resources available to gather data on large numbers of participants. For example, Alterman and McLellan (1993) conducted a study funded by the National Institute of Drug Abuse (NIDA), the National Institute of Alcohol Abuse (NIAA), and the Department of Veterans Affairs investigating 215 alcohol and cocaine dependent participants; Harrison et al. (1988) conducted a state funded project investigating 319 alcohol dependent participants; Longabaugh et al. (1983) conducted a study funded by Blue Cross Blue Shield and the NIAA of 174 alcohol dependent participants; and,

McClachlan and Stein conducted a project funded by the Ontario Ministry of Health investigating 100 alcohol dependent participants.

Third, the use of self report data is also a limitation of this study. The debate over the use of self-report data in clinical and substance abuse research is a long one, with no definitive resolution. However, a number of studies have confirmed the validity of self-report of substance abuse, especially when such reporting does not lead to negative consequences (Sobell et al., 1979; Harrel, 1985). The decision to use self-report data in this study was based on both the evidence supporting the validity of self-report data and practical concerns. For example, requiring participants to submit to drug testing at 10 days, 30 days, and 60 days, would likely have significantly decreased the number of individuals willing to participate in the study, as well as having a negative impact on follow-up. Additionally, while misrepresentation may have occurred, there is no reason to believe that one group was more or less likely to misrepresent than another.

Fourth, the instrumentation utilized in this study has, for the most part, not been researched and validated completely. It is recommended that future research utilize the complete Addiction Severity Index, as well as utilizing adjunctive assessments which have shown utility in addictions research. Some recommended assessment devices include the Halikas-Crosby Drug Impairment Rating Scale for Cocaine (HALDIRS; Halikas & Crosby, 1992), the Symptom Checklist - 90 - Revised (SCL-90-R; Derogatis, 1977), and a brief measure of life satisfaction, such as that constructed by Neugarten, Havighurst, and Tobin (1961).

Additionally, while the instruments used to assess participants at intake, 10 days,

30 days and 60 days included portions of the well researched and validated Addiction Severity Index (McLellan, et al., 1980), other scales were arrived at through consensus of the primary authors and five certified addictions counselors. These scales possess face validity and practical utility, however, they have not been thoroughly researched and validity and reliability information are not currently available. Further, the scales are arrived at by computing a composite of between 2 to 10 questions. Because the number of questions for composites is quite small for some scales, overall scores can be significantly impacted by the response to only one question.

Fifth, residential and IOP treatment are not different kinds of treatment, rather they are settings for treatment. This study manipulated only one dimension of treatment planning for cocaine and alcohol dependent participants, the setting. While this is an important treatment variable, other variables such as modality and orientation deserve the attention of researchers. For example, the treatment approach utilized in this study is heavily influenced by Twelve Step philosophy and relies upon Alcoholics Anonymous as a foundation for treatment. Research investigating other treatment approaches (e.g., biopsychosocial models, rational recovery, etc...) would be helpful by providing a broader research base with which to generalize the current findings.

Sixth, the length of follow-up in this study is short relative to that of previous research. Previous research has typically investigated follow-up at 6 months (Campbell et al., 1997; McKay et al., 1994; Schneider, Mittelmeier, & Gadish, 1996), or, more rarely, longer (Edwards et al., 1977; McLachlan & Stein, 1982). A general assumption in the field of chemical dependence treatment is that relapse generally occurs in the first

6 months of treatment, a finding which has some research support (Hubbard & Marsden, 1986; Hunt et al., 1971). McLellan et al. (1997) state that approximately 60% to 80% of patients who relapse do so within three to four months after completing treatment. If this is the case, it is important that future research extend the length of follow-up investigated to at least 90 days, preferably to 6 month follow-up.

Finally, the attrition rate at 60 days in this study was higher than most published research at 58.3%. Studies reporting attrition rate at 3 months, the time frame most closely related to that investigated in this study, report attrition rates varying from 9 percent to 32.4 percent. In the current study data were available for less than half of the sample (41.7%) at 60 day follow-up. For this reason, the percentage of subjects in the repeated measures ANOVAs and logistic regression analyses was considerably lower at 30 and 60 days due to missing data at the follow-up.

There are several possible explanations for the larger attrition rate occurring in this study. First, nearly thirteen percent (12.8%) of the participants in this study were currently homeless. Due to the lack of a permanent address, these individuals became increasingly difficult to locate as time progressed. Second, over fifty percent (51.1%) of the participants in this study were unemployed. It is possible that several participants relocated in an effort to secure employment during the time period following this study. Third, while this study provided a small financial incentive, a five dollar gift certificate, published studies typically offer a much larger incentive, typically around twenty dollars. Finally, a great deal of the data in the published literature is gathered in Veteran's Administration Hospital settings. Typically these are settings to which treatment

recipients return on a regular basis. Treatment recipients are also more likely to keep the facility updated with regard to changes in address or phone number. The unitary focus of the treatment facility where this study was conducted does not necessitate such updating of information. It is unclear how the attrition rates in this study would compare to those found in unpublished research.

Future research could increase the amount of data available at follow-up in a number of ways. For example, by increasing the overall sample size more data will be available at follow-up even with similar attrition rates. Additionally, and perhaps more effectively, participants could be provided a stronger incentive for participation at follow-up points.

Future Directions and Conclusions

The current study provides a good template for future research; however, there are a number of ways in which the methods utilized in this study can be improved upon. Whether the present results of this study will be sustained in later studies is a matter to be determined by subsequent research.

The basic hypothesis of this study, whether or not IOP is as effective, or more effective, than inpatient treatment is one that requires further study. While this study, and others like it, may demonstrate that intensity does not determine the effectiveness of treatment, it fails to show what specifically does. The field of chemical dependence would greatly benefit from a knowledge of those variables which do determine treatment efficacy.

As pressures to contain the cost of health care increase, managed care organizations are likely to respond by reducing the intensity and duration of treatment. For many treatment providers this has been a disheartening and discouraging process. Perhaps, though, a part of the silver lining in this trend is to reveal those areas where treatment can successfully be reduced in intensity and duration and still provide effective results. Research to date has indicated that inpatient substance dependence is such an area of treatment. If intensive outpatient treatment is demonstrated to be an effective alternative to inpatient placement, there really are no losers, barring perhaps for-profit treatment agencies. Insurance providers will benefit from decreased costs, treatment agencies can provide more services to a larger number of individuals, and patients are more likely to self-initiate treatment when it is less intrusive.

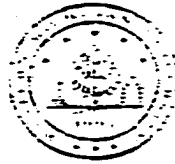
Finally, perhaps by identifying low cost effective treatment we may begin to swing the pendulum from enforcement of drug policy to treatment. Since about 1970, American politics have focused on the “hard side” of drug policy, enforcement, and placed the “soft side”, treatment and education, on the back burner (Baum, 1996).

The irony of current drug policy is perhaps captured best in a passage of Dan Baum’s 1996 book, *Smoke and Mirrors*. In the passage Baum discusses William Bennett’s (the drug czar during the Bush Administration) highly publicized attitude toward drugs. Bennett describes drugs as possessing the capacity to enslave and take away the ability of individuals to function as free citizens. A sentiment shared by many and one which may truly be accurate. However, the irony comes about when one considers that during the same era those individuals who fell into the “slavery of

addiction” were prosecuted and imprisoned for making a bad “choice.” Bennett, in talking with David Tell, his speechwriter, makes the comment that “those who have even the barest contact with drugs should be punished severely” (p. 272).

The idea that drugs are addictive and disabling indicates that treatment, and not prosecution, should be the first line of defense. However, if such a concept is to be acceptable to the American public, treatment providers must show that the cost of treatment is lower than the cost of imprisonment. Additionally, it must be shown that the long-term benefits associated with treatment are more beneficial to society than those which result from prosecution and incarceration.

Appendix A
Informed Consent Form



WESTERN MICHIGAN UNIVERSITY

Consent Form

Principal Investigator: Malcolm H. Robertson, Ph.D.
Research Associate: Shawn E. Channell, MA, TLLP

Approved for use for one year from this date:
H. S. I. R. B.
APR 13 1998
Richard A. Wright
HSIRB Chair

I have been asked to participate in a research project investigating the outcome of substance abuse treatment at different levels of care at Gateway Recovery Services. I understand that these data will be used by Gateway Recovery Services in order to implement the most appropriate standards of care for future recipients. I also understand that these data will be used for Shawn Channell's dissertation project, entitled "Comparing Outcome of Residential, Day, and Intensive Outpatient Treatment Services for Chemical Dependence." Data will be collected between the months of April, 1998 and September, 1999.

My consent to participate in this project indicates that I will be asked to complete a 40 question assessment at intake, 10 days into treatment, 30 days after beginning treatment and 60 days after beginning treatment. I understand that this involves completing a questionnaire on 4 occasions. I also understand that the questionnaire will be mailed to me at 30 and 60 days after beginning treatment, with all postage expenses pre-paid by the researcher. Participation will also involve providing general information about myself, including age, gender, history of drug use, treatment history, employment history, as well as involvement with the legal system.

As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate measures will be taken; however, no compensation or additional treatment will be made available except as otherwise stated in this consent form. I understand that completing the questionnaires will be the only impact on the services I receive at Gateway, my treatment will not be altered in any way by this research, and I will receive the same quality of care regardless of my participation.

I understand that my participation may benefit future treatment recipients by allowing Gateway to modify treatment procedures to provide the most appropriate care. I also understand that individuals requiring treatment at other facilities may be assisted by the outcome of this research. My participation will also provide me the opportunity to receive \$10.00 in gift certificates redeemable at McDonald's Restaurant or United Artists Theatres. One \$5.00 gift certificates will be mailed to you upon completion of the 30 day questionnaire and one at the completion of the 60 day questionnaire.

I understand that all the information collected from me is confidential. That means that my name will not appear on any papers on which this information is recorded. The forms will all be coded, and Shawn Channell will keep a separate master list with the names of participants and the corresponding code numbers. Following the completion of data collection this master list will be destroyed. All other forms will be retained for three years in a locked file at Gateway Recovery Services.

I understand that I may refuse to participate or quit at any time during the study without effect on the services I receive from Gateway Recovery Services. This means that my treatment at Gateway Recovery Services will not be affected if I should refuse to participate or withdraw from participation. If I have any questions or concerns about this study, I may contact either Malcolm Robertson at 387-8339 or Shawn Channell at 382-9820. I may also contact the Chair of the Human Subjects Institutional Review Board at Western Michigan University at 387-8293 or the Vice President for Research at 387-8298 with any concerns that I have. My signature below indicates that I understand the purpose and requirements of the study and that I agree to participate.

Signature

Date

Appendix B
Intake Evaluation

Rev. 5/11/98

Intake Assessment

Please take the time to read each question in the questionnaire thoroughly. Keep in mind that some questions require you to fill in the blank, others are yes or no, and others require you to rate your answer on a scale of 1 to 5. On all questions with a rating (1-5), 1 is the least and 5 is the most. Answer each question as honestly as possible and remember that your answers are completely confidential (they will not be shared with others, including your therapist). Please remember to turn this questionnaire in to the receptionist when finished.

Section 1 - Medical History

1. How many times in your life have you been hospitalized for medical problems (do not include hospitalizations for alcohol or drug problems)?

2. Do you have any chronic (long-term) medical problems which continue to interfere with your life?
YES NO

3. Are you taking any prescribed medication on a regular basis for a physical problem?
YES NO

4. How many days have you experienced medical problems in the past 30 days?

5. How troubled or bothered have you been by these medical problems in the past 30 days?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely

6. How important to you now is treatment for these medical problems?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely

Section 2 - Drug and Alcohol Use

7. How much would you say you spent during the past 30 days on alcohol?
\$ _____

8. How many times in your life have you been treated for alcohol abuse?

9. How bothered have you been in the past 30 days by alcohol problems?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely

10. How important to you now is treatment for these alcohol problems?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely

11. How many days in the last 30 have you experienced problems with drug abuse?

12. How bothered have you been in the past 30 days by drug problems?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely

13. How important to you now is treatment for these drug problems?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely

14. Do you feel that someone has forced you into treatment?

YES NO

15. Do you believe that you are an addict and/or alcoholic?

YES NO

16. Do you believe that if you use drugs and/or alcohol you will lose control?

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree.

17. Do you believe that it is necessary that you remain abstinent (always clean) from all mind-altering chemicals?

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

Section 3 - Psychiatric History

Have you had a significant period in your life (a period of two weeks or greater), that was not a direct result of drug or alcohol use, in which you have:

18. Experienced serious depression that was not a direct result of drug or alcohol use?
YES NO
In the past 30 days?
YES NO
19. Experienced serious anxiety or tension that was not a direct result of drug or alcohol use?
YES NO
In the past 30 days?
YES NO
20. Heard voices or seen things which were not really there which was not a direct result of drug or alcohol use?
YES NO
In the past 30 days?
YES NO
21. Had trouble understanding or remembering that was not a direct result of drug or alcohol use?
YES NO
In the past 30 days?
YES NO
22. Become violent that was not a direct result of drug or alcohol use?
YES NO
In the past 30 days?
YES NO
23. Have you ever, at any time, thought seriously about suicide. Thinking which was not a direct result of drug or alcohol use?
YES NO
In the past 30 days?
YES NO
24. Have you ever attempted suicide. An attempt that was not a direct result of drug or alcohol use?
YES NO
In the past 30 days?
YES NO

25. Have you taken prescribed medications for any psychological or emotional problem in your life?
 YES NO
 In the past 30 days?
 YES NO
26. How many days in the past 30 have you experienced these psychological or emotional problems?

27. How much have you been bothered by psychological or emotional problems in the last 30 days?
- | | | | | |
|------------|----------|----------|--------------|-----------|
| 1 | 2 | 3 | 4 | 5 |
| Not at All | Slightly | Somewhat | Considerably | Extremely |

Section 4 - Miscellaneous

28. How often do you attend AA or NA meetings (circle one).
 NEVER RARELY ONCE A MONTH ONCE A WEEK DAILY
 Write in number of times per week _____
29. How many times have you attended AA or NA in the past 30 days?

30. Do you have persistent cravings for alcohol or other drugs?
- | | | | | |
|-------|--------|-----------|-------------------|--------------|
| 1 | 2 | 3 | 4 | 5 |
| Never | Rarely | Sometimes | A lot of the time | All the time |
31. Do you believe that you can recognize triggers (things which may make you want to use drugs and/or alcohol) and cope with urges that threaten your recovery?
- | | | | | |
|-------|--------|-----------|-------------------|--------------|
| 1 | 2 | 3 | 4 | 5 |
| Never | Rarely | Sometimes | A lot of the time | All the time |
32. Do you believe that you can manage triggers (things which may make you want to use drugs and/or alcohol) and urges without using drugs and/or alcohol?
- | | | | | |
|-------|--------|-----------|-------------------|--------------|
| 1 | 2 | 3 | 4 | 5 |
| Never | Rarely | Sometimes | A lot of the time | All the time |

Section 4 - Environment

33. Do you believe that you have skills that allow you to remain abstinent/clean even when your environment is not supportive of your recovery?

1	2	3	4	5
Not at All	Rarely	Sometimes	A lot of the time	All the time

34. Have you been able to stay away from environments and situations where you might use drugs or alcohol?

1	2	3	4	5
Not at All	Rarely	Sometimes	A lot of the time	All the time

35. Do you have transportation available so that you can attend AA or NA meetings?

1	2	3	4	5
Never	Rarely	Sometimes	A lot of the time	All the time

36. Is your home environment supportive of your recovery?

1	2	3	4	5
Not at All	Rarely	Sometimes	A lot of the time	All the time

37. Do you have family and/or friends that will help you in recovery?
YES NO

38. Are you currently working (circle one)?

Full Time Part Time Not at All

39. How many days were you paid for working in the past 30?

40. How much money did you receive for working (net income) in the past 30 days?

\$ _____

Appendix C

Center for Substance Abuse Services Data System (Demographic Data)

MICHIGAN DEPARTMENT OF PUBLIC HEALTH OFFICE OF SUBSTANCE ABUSE SERVICES-DATA SYSTEM

OSAS-021 (12/91)
Authority: P.A. 368 of 1992
Revised

88

CLIENT ADMISSION

☐ ORIGINAL

☐ CORRECTION

☐ DELETION

PROGRAM NAME: _____ CODE: _____ COMPLETED BY: _____

1. CLIENT I.D. # _____
2. UNIVERSAL I.D. # _____
3. SERVICE CATEGORY _____
4. ADMISSION DATE _____
5. POSITION # _____
6. ADMISSION TYPE 1=First Admission 2=Readmission
7. PREVIOUS SUBSTANCE ABUSE ADMISSION(S) _____

8. SOURCE OF REFERRAL (Circle Only One)
From Substance Abuse Program:
1=Outpatient 13=Central Assmnt
5=Resid:Detox/ASP 14=Other SARF
6=Residential 15=Drunk Driving Assmnt
9=Intensive Outpatient 17=AHSE
10=Hosp:Acute Care 18=Prevention
11=Hosp:Rehab 19=Student Assistance Program
12=Hosp:Sub-acute Detox 29=Other: _____

- Specify: _____
County _____ Program _____
Or From Other Areas:
30=Self 37=Mental Health 44=School
31=Court-Driving 38=Dept. of Soc. Svcs 45=Physician
32=Court-Other 39=Family/Friend/Rel 46=Hospital (Non-SA)
33=Other Crim Justice 40=Other Human Svcs 47=Sub Abuse Client
34=Police 41=Employer 48=Alcoholics Anon
35=Secretary of State 42=Union 49=Corrections
36=Lawyer 43=Clergy 50=Other _____

9. RESIDENCE _____
County _____ Census Tract/CVT Code _____

10. DATE OF BIRTH _____

11. SEX 1=Male 2=Female

12. RACE
1=White 5=Asian
2=Black 6=Other
4=Native American 7=Alaskan Native

13. ETHNIC BACKGROUND
0=Not one of listed groups 3=Cuban
1=Puerto Rican 4=Other Hispanic
2=Mexican 5=Arab/Chaldean

14. MARITAL STATUS
1=Never Married 3=Widowed 5=Separated
2=Married/Cohabiting 4=Divorced

15. MILITARY SERVICE 0=No 1=Yes

16. EDUCATION Highest Grade Completed _____

17. CURRENT EMPLOYMENT STATUS (Circle Only One)

- In Labor Force: Not In Labor Force:
1=Employed; full-time 4=Homemaker
(35 or more hours per week) 5=Student
2=Employed; part-time 6=Retired
(fewer than 35 hours per week) 7=Other: _____
3=Unemployed (read off, from
telephone, looking for work, etc.)

18. IN SCHOOL NOW 0=No 1=Yes
19. PERSONAL INCOME _____ (Actual gross for past 12 months)
20. HOUSEHOLD INCOME _____
21. NUMBER OF DEPENDENTS (Include Client) _____
22. PUBLIC ASSISTANCE 0=No 1=Yes
23. HEALTH INSURANCE COVERAGE
00=No Insurance Coverage 70=Health Maintenance Organization (HMO)
20=Blue Cross/Blue Shield Preferred Provider Organization (PPO)
30=Commercial Carrier
50=Self-Insured Program/Fund
60=Medicare-Old Age
61=Medicare-Disability
62=Medicaid (Insurer I.D.#) _____

24. LEGAL STATUS
0=No Current Actions or Cases 4=Awaiting Trial
1=In Jail 5=Awaiting Sentencing
2=Parole 6=Other: _____
3=Probation

25. ARREST HISTORY
Total of all Arrests _____ No. Times Arrested Last 6 Mos. _____ No. Times Arrested Last 12 Mos. _____
Possession or Sale of Drugs/Alcohol _____
Drunk or Impaired Driving _____
00=No Arrests for Period

26. LIVING ARRANGEMENTS
1=Independent 2=Dependent 3=Homeless

27. SUBSTANCE USE HISTORY

	Primary	Secondary	Tertiary
Drug Code			
Route of Admin.			
Age at First Use			
Days Used in Last 30			
Initially a Prescription?			

28. METHADONE PART OF TREATMENT 0=No 1=Yes

29. DIAGNOSTIC CODE Primary _____
Secondary _____

30. SUBSTANCE USE GOAL
1=Abstinence 2=Controlled Use 3=Not Applicable

31. PREGNANT AT ADMISSION 0=No 1=Yes

32. OTHER FACTORS (Circle up to 3)
1=Copependent 4=Hearing Impaired 7=Mental Retardation
2=Adult Child 5=Visually Impaired 8=Mobility Impaired
3=Significant Other 6=Head Injury 9=Mental Illness

33. SPECIAL DATA/COOED REMARKS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Appendix D

Treatment Outcome Assessment- 10 Day Follow-Up

10 Day Follow-up

Please take the time to read each question in the questionnaire thoroughly. Keep in mind that some questions require you to fill in the blank, others are yes or no, and others require you to rate your answer on a scale of 1 to 5. On all questions with a rating (1-5), 1 is the least and 5 is the most. Answer each question as honestly as possible and remember that your answers are completely confidential (they will not be shared with others, including your therapist). Please remember to turn this questionnaire in to the receptionist or the person who gave you the questionnaire when finished.

Section 1 - Medical Status

1. Do you have chronic medical problems which continue to interfere with your life?
YES NO
2. Are you taking any prescribed medication on a regular basis for a physical problem?
YES NO
3. How many days have you experienced medical problems in the past 30 days?

4. How troubled or bothered have you been by these medical problems in the past 30 days?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely
5. How important to you now is treatment for these medical problems?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely

Section 2 - Drug/Alcohol Use

6. How important to you now is treatment for alcohol problems?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely
7. How important to you now is treatment for drug problems?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely
8. Do you feel that someone has forced you into treatment?

YES NO

9. Do you believe that you are an addict and/or alcoholic?

YES NO

10. Do you believe that if you use drugs and/or alcohol you will lose control?

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

11. Do you believe that it is necessary that you remain abstinent (always clean) from all mind-altering chemicals?

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

12. Do you have family and/or friends that will help you in recovery?

YES NO

13. Do you receive support from AA or NA to help you with your recovery?

YES NO

14. Do you have persistent cravings for alcohol or other drugs?

1	2	3	4	5
Never	Rarely	Sometimes	A lot of the time	All the time

15. Do you believe that you can recognize triggers (things which may make you want to use drugs and/or alcohol) and urges that threaten your recovery?

1	2	3	4	5
Never	Rarely	Sometimes	A lot of the time	All the time

16. Do you believe that you can manage triggers (things which may make you want to use drugs and/or alcohol) and urges without using drugs and/or alcohol?

1	2	3	4	5
Never	Rarely	Sometimes	A lot of the time	All the time

17. How many times have you attended AA or NA in the *past 10 days*?

Section 3 - Psychiatric Status

18. How much have you been bothered by psychological or emotional problems in the *past 10 days*?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely

19. How important to you now is treatment for psychological problems?

1	2	3	4	5
Not at All	Slightly	Somewhat	Considerably	Extremely

Section 4 - Environment

20. Do you believe that you have skills that allow you to remain abstinent even when your environment is not supportive of your recovery?

1	2	3	4	5
Not at All	Rarely	Sometimes	A lot of the time	All the time

21. In the past 10 days, have you been able to stay away from environments and situations where you might use drugs or alcohol?

1	2	3	4	5
Not at All	Rarely	Sometimes	A lot of the time	All the time

22. Do you have transportation available so that you can attend AA or NA meetings?

1	2	3	4	5
Never	Rarely	Sometimes	A lot of the time	All the time

23. Is your home environment supportive of your recovery?

1	2	3	4	5
Not at All	Rarely	Sometimes	A lot of the time	All the time

24. Have you used drugs or alcohol since *beginning* treatment?

YES NO

For the following questions, please indicate the level to which you agree with the statement regarding your treatment at Gateway. Remember that all individual information is confidential and unknown to your therapist or insurance provider.

25. Gateway has helped me learn the skills necessary to live a healthy life that is free from alcohol and drugs.

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

26. Group therapy at Gateway helped me with my recovery (Answer only if you had group therapy at Gateway).

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

27. Individual therapy at Gateway helped me with my recovery (Answer only if you had individual therapy at Gateway).

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

28. The lectures I attended at Gateway helped me with my recovery (Answer only if you attended lectures at Gateway).

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

29. Acupuncture at Gateway helped me with my recovery (Answer only if you received acupuncture at Gateway).

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

30. Which of the 12 steps have you completed in your recovery? (Circle steps you have completed.)

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Appendix E

Treatment Outcome Assessment- 30 and 60 Day Follow-Up

Follow-up

Medical Status

1. Do you have any chronic medical problems which continue to interfere with your life?
YES NO

2. Are you taking any prescribed medication on a regular basis for a physical problem?
YES NO

3. How many days have you experienced medical problems in the past 30?

4. How troubled or bothered have you been by these medical problems in the past 30 days?

1	2	3	4	5
Not at All	Slightly	Moderately	Considerably	Extremely

5. How important to you now is treatment for these medical problems?

1	2	3	4	5
Not at All	Slightly	Moderately	Considerably	Extremely

Drug/Alcohol Use

In the space below please indicate the number of days, in the past 30, that you have used alcohol or drugs. Leave space blank if you have not used this substance.

DRUG OR ALCOHOL	PAST 30 DAYS
Alcohol (any at all)	
Alcohol (to intoxication)	
Heroin	
Methadone	
Other opiates	
Barbiturates	
Sedatives/Tranquilizers (Valium, Xanax, etc...)	
Cocaine	
Amphetamines ("Speed")	
Marijuana	
Hallucinogens (LSD, Mushrooms, etc...)	
Methamphetamine ("Crank")	
Crack	
Inhalants	
More than one substance per day (includes alcohol)	

6. Which substance is the major problem for you? _____
7. How much would you say you spent during the past 30 days on alcohol?
\$ _____
8. How bothered have you been in the past 30 days by alcohol problems?

1	2	3	4	5
Not at All	Slightly	Moderately	Considerably	Extremely

9. How important to you now is treatment for these alcohol problems?

1	2	3	4	5
Not at All	Slightly	Moderately	Considerably	Extremely

10. How many days in the last 30 have you experienced problems with drug abuse?

11. How bothered have you been in the past 30 days by drug problems?

1	2	3	4	5
Not at All	Slightly	Moderately	Considerably	Extremely

12. How important to you now is treatment for these drug problems?

1	2	3	4	5
Not at All	Slightly	Moderately	Considerably	Extremely

13. Do you feel like you have been forced into treatment?

YES NO

14. Do you believe that you are an addict and/or alcoholic?

YES NO

15. Do you believe that if you use drugs and/or alcohol you will lose control?

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

16. Do you believe that it is necessary that you remain abstinent from all mind-altering chemicals?

1	2	3	4	5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

Psychiatric Status

Within the past 30 days have you:

17. Experienced serious depression?

YES NO

18. Experienced serious anxiety or tension?

YES NO

19. Heard voices or seen things which were not really there?

YES NO

20. Had trouble understanding or remembering?

YES NO

21. Become violent?

YES NO

22. Thought seriously about suicide?

YES NO

23. Attempted suicide?

YES NO

24. Have you taken prescribed medications for any psychological or emotional problem?

In the past 30 days?

YES NO

25. How many days in the past 30 have you experienced these psychological or emotional problems?

26. How much have you been bothered by psychological or emotional problems in the last 30 days?

1	2	3	4	5
Not at All	Slightly	Moderately	Considerably	Extremely

Specifically Treatment Related

27. How often do you attend AA or NA meetings (circle one).

NEVER RARELY ONCE A MONTH ONCE A WEEK DAILY

28. Do you have family and/or friends that will help you in recovery?

YES NO

29. Do you receive support from AA or NA to help you with you recovery?

YES NO

30. Do you have persistent cravings for alcohol or other drugs?

1	2	3	4	5
Never	Rarely	Sometimes	A lot of the time	All the time

31. Do you believe that you can recognize triggers and urges that threaten your recovery?

1	2	3	4	5
Never	Rarely	Sometimes	A lot of the time	All the time

32. Do you believe that you can manage triggers and urges without using drugs and/or alcohol?

1	2	3	4	5
Never	Rarely	Sometimes	A lot of the time	All the time

Environment

33. Do you believe that you have skills that allow you to remain abstinent even when your environment is not supportive of your recovery?

1	2	3	4	5
Not at All	Rarely	Sometimes	A lot of the time	All the time

34. Have you been able to stay away from environments and situations where you might use drugs or alcohol?

1	2	3	4	5
Not at All	Rarely	Sometimes	A lot of the time	All the time

35. Do you have transportation available so that you can attend AA or NA meetings?

1	2	3	4	5
Never	Rarely	Sometimes	A lot of the time	All the time

36. Is your home environment supportive of your recovery?

1	2	3	4	5
Not at All	Rarely	Sometimes	A lot of the time	All the time

37. Have you used drugs or alcohol since *beginning* treatment?
YES NO

38. How many times have you used drugs or alcohol since *completing* treatment?

39. Which of the 12 steps have you completed in your recovery? (Circle steps you have completed.)

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

40. Are you currently working?

Full Time Part Time Not at All

41. How many days were you paid for working in the past 30?

42. How much money did you receive for working (net income) in the past 30 days?

43. Have you participated in treatment in the past 30 days (does *not* include AA or NA)?
Yes No
44. If you answered "Yes" to Question 43, what type of treatment have you participated in (Circle One)?

Outpatient (Individual counseling only, up to one group per week)

Intensive Outpatient (At least three groups for a total of 9 to 12 hours per week)

Day Treatment (At least 4 groups a week for 7 or more hours per day)

Residential/Inpatient Treatment

Appendix F
HSIRB Approval

WESTERN MICHIGAN UNIVERSITY

Date: 13 April 1998

To: Malcolm Robertson, Principal Investigator
Shawn Channell, Student Investigator

From: Richard Wright, Chair

Re: HSIRB Project Number 98-03-02

This letter will serve as confirmation that your research project entitled "Comparing Outcome of Residential, Day and Intensive Outpatient Treatment Services for Chemical Dependency" has been **approved** under the **full** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 13 April 1999

C: LESTER WRIGHT

Appendix G
Addiction Severity Index Composite Scales Scoring

Addiction Severity Index Composite Scores

I. Intake

1. Medical: $\#4/90 + \#5/12 + \#6/12$
2. Employment: $1 - (\#35/12 + \#39/90 + \text{LOG}(\#40/27))$
3. Psychiatric: $\#18/10 + \#19/10 + \#20/10 + \#21/10 + \#22/10 + \#23/10 + \#24/10 + \#25/10 + \#26/300 + \#27/40$
4. Alcohol Use: $\text{Demo Data}/150 + \text{Demo Data}/150 + \#9/20 + \#10/120 + \text{LOG}(\#7/365)$
5. Drug Use: $\text{Demo Data}/180 + \text{Demo Data}/180 + \text{Demo Data}/180 + \#12/24 + \#11/80 + \#13/24$

II. 10 Day

1. Medical: $\#4/8 + \#5/8$
2. Psychiatric: $\#18/8 + \#19/8$
3. Alcohol Use: $\text{Demo Data}/90 + \text{Demo Data}/90 + \#6/12$
4. Drug Use: $\text{Demo Data}/120 + \text{Demo Data}/120 + \text{Demo Data}/120 + \#7/16$

III. Follow-Up

1. Medical: $\#3/90 + \#4/12 + \#5/12$
2. Employment: $1 - (\#35/12 + \#41/90 + \text{LOG}(\#42/27))$
3. Alcohol Use: $\text{Chart}/150 + \text{Chart}/150 + \#8/20 + \#9/20 + \text{LOG}(\#7/36.5))$
4. Drug Use: $\text{Chart}/360 (*10) + \#10/360 + \#11/48 + \#12/48$
5. Psychiatric: $\#17/10 + \#18/10 + \#19/10 + \#20/10 + \#21/10 + \#22/10 + \#23/10 + \#24/10 + \#25/300 + \#26/140$

Appendix H
Composite Scales Scoring

General Composite Scores

I. Intake

1. Denial: $\#14/4 + \#15/4 + \#16/16 + \#17/16$
2. Acceptance: $\#15/3 + \#16/12 + \#17/12$
3. AA/NA Attendance: $1 - (\#28/8 + \#29/60)$
4. Relapse Prevention: $1 - (\#31/16 + \#32/16 + \#33/16 + \#34/16)$
5. Social Support: $1 - (\#36/8 + \#37/2)$

II. 10 Day

1. Denial: $\#8/4 + \#9/4 + \#10/16 + \#14/16$
2. Acceptance: $\#10/12 + \#9/3 + \#11/12$
3. AA/NA Attendance: $1 - (\#17/60 + \#13/2)$
4. Relapse Prevention: $1 - (\#15/16 + \#16/16 + \#20/16 + \#21/16)$
5. Social Support: $1 - (\#12/3 + \#13/3 + \#23/12)$

III. Follow-Up

1. Denial: $\#13/4 + \#14/4 + \#15/16 + \#16/16$
2. Acceptance: $\#14/3 + \#15/12 + \#16/12$
3. AA/NA Attendance: $1 - (\#27/8 + \#29/2)$
4. Relapse Prevention: $1 - (\#31/16 + \#32/16 + \#33/16 + \#34/16)$
5. Social Support: $1 - (\#28/3 + \#29/3 + \#36/12)$

BIBLIOGRAPHY

- Alterman, A.I., Cook, T.G., Metzger, D., Rutherford, M.J., Cacciola, J.S., McDermott, P.A., & Brown, Jr., L.S. (1998). New scales to assess change in the Addiction Severity Index for the opioid, cocaine, and alcohol dependent. *Psychology of Addictive Behaviors*, 12, 233-246.
- Alterman, A.I., & McLellan, T. (1993). Inpatient and day hospital treatment services for alcohol dependence. *Journal of Substance Abuse Treatment*, 10, 269-275.
- Alterman, A.I., O'Brien, C.P., McLellan, A.T., August, D.S., Snider, E.C., Droba, M., Cornish, J.W., Hall, C.P., Raphaelson, A.H., & Schrader, F. (1994). Effectiveness and costs of inpatient and day hospital cocaine rehabilitation treatment. *Journal of Nervous and Mental Disease*, 182, 157-163.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Washington, D.C.: American Psychiatric Press.
- American Society of Addiction Medicine. (1991) *ASAM: Patient placement criteria for the treatment of substance related disorders*. Chevy Chase, MD: American Society of Addiction Medicine, Inc.
- American Society of Addiction Medicine. (1996). *ASAM: patient placement criteria for the treatment of substance related disorders - Second Edition*. Chevy Chase, MD: American Society of Addiction Medicine, Inc.
- Campbell, J., Gabrielli, W., Laster, L.J., & Liskow, B.I. (1997). Efficacy of outpatient intensive treatment for drug abuse. *Journal of Addictive Disorders*, 16, 15-25.
- Carroll, K.M. (1996). Integrating psychotherapy and pharmacotherapy in substance abuse treatment. In F. Rotgers, D.S. Keller, & J. Morgenstern (Eds.), *Treating Substance Abuse*. New York: Guilford.
- Creed, F., Black, D., Antony, P., Osborn, M., Thomas, P., & Tomenson, B. (1990). Randomised controlled trial of day patient versus inpatient psychiatric treatment. *British Medical Journal*, 300, 1033-1037.

- Cummings, N.A. (1991). Inpatient versus outpatient treatment of substance abuse: Recent developments in the controversy. *Contemporary Family Therapy*, 13, 507-520.
- Derogatis, L. (1977). *SCL-R-90: Administration, Scoring and Procedures*. Baltimore, MD: Clinical Psychometric Research.
- Edwards, G. Orford, J., Egert, S., Guthrie, S., Hawker, A., Hensman, C., Mitcheson, M., Oppenheimer, E., & Taylor, C. (1977). Alcoholism: A controlled trial of "treatment" and "advice". *Journal of Studies on Alcohol*, 38, 1004-1031.
- Firshein, J. (1998a). Does treatment work?. *Close to Home Online: Does Treatment Work*. Available WWW at:
<http://www.pbs.org/wnet/closetohome/policy/html/treatwork.html>.
- Firshein, J. (1998b). Legislating insurance parity for addiction treatment. *Close to Home Online: Legislating Insurance Parity*. Available WWW at:
<http://www.pbs.org/wnet/closetohome/policy/html/insurance.html>.
- Firshein, J. (1998c). Our current policy. *Close to Home Online: Our Current Policy*. Available WWW at:
<http://www.pbs.org/wnet/closetohome/policy/html/current.html>.
- Gawin, F.H. & Ellinwood, E.H. (1989). Cocaine dependence. *Annual Review of Medicine*, 40, 149-161.
- Gawin, F.H. & Kleber, H.D. (1986). Abstinence symptomatology and psychiatric diagnosis in cocaine abusers. *Archives of General Psychiatry*, 43, 107-113.
- Gotheil, E. (1997). Intensive outpatient treatment: Methods and outcomes. *Journal of Addictive Disorders*, 16, xv-xix.
- Gottheil, E., Sterling, R.C., & Weinstein, S.P. (1995). Generalizing from controlled treatment outcome studies. *The American Journal of Addictions*, 4, 331-338.
- Greenfield, S. (1989). The state of outcome research: Are we on target? *New England Journal of Medicine*, 320, 1142-1143.
- Halikas, J. & Crosby, R. (1992). *Drug Impairment Rating Scale for Cocaine*. Minneapolis, MN: Department of Psychiatry, University of Minnesota.

- Harrell, A.V. (1985). Validation of self-report: The research record. *National Institute on Drug Abuse Research Monograph 57*, 12-21. Rockville, MD: Department of Health and Human Services.
- Harrison, P.A., Hoffman, N.G., Gibbs, L., Hollister, C.D., & Luxenberg, M.G. (1988). Determinants of chemical dependence treatment placement: Clinical, economic, and logistic factors. *Psychotherapy*, 25, 356-364.
- Hoffman, N.G. (1989). Comment on Mazza and Stevens. *American Psychologist*, 44, 1244-1245.
- Hoffman, N.G., Halikas, J.A., and Mee-Lee, D. (1987). *The Cleveland Admission, Discharge and Transfer Criteria: model for chemical dependency treatment programs*. Cleveland, Ohio: The Northern Ohio Chemical Dependency Treatment Directors Association.
- Howard, K.I., Cox, W.M., & Saunders, S.M. (1990). Attrition in substance abuse comparative treatment research: The illusion of randomization. *Psychotherapy and Counseling in the Treatment of Drug Abuse* (National Institute on Drug Abuse Research Monograph # 104). Washington, D.C.: U.S. U.S. Government Printing Office.
- Hu, T., Hunkeler, E.M., Weisner, C., Li, E., Grayson, D.K., Westphal, J., & McLellan, A.T. (1997). Treatment participation and outcome among problem drinkers in a managed care alcohol outpatient treatment program. *Journal of Mental Health Administration*, 24, 23-34.
- Hubbard, R.L., & Marsden, M.E. (1986). Relapse to use of heroin, cocaine and other drugs in the first year after treatment. *NIDA Research Monograph 72*. Rockville, MD: Department of Health and Human Services.
- Hunt, W.A., Barnett, W., Branch, L.G. (1971). Relapse rates in addiction programs. *Journal of Consulting and Clinical Psychology*, 27, 455-456.
- Jones, R.T. (1971). Marijuana induced "high": influence of expectations, setting, and previous drug experience. *Pharmacological Reviews*, 23, 359-369.
- Julien, R.M. (1988). *A Primer of Drug Action* (5th ed.). New York: W.H. Freeman and Company.
- Kiesler, C.A. & Sibulkin, A.E. (1987). *Mental Hospitalization*. Newbury Park,

CA: Sage.

- Kosten, T.R. (1989). Pharmacotherapeutic interventions for cocaine abuse. *Journal of Nervous and Mental Disease*, 177, 379-389.
- Kosten, T.R., Rounsaville, B.J., & Kleber, H.D. (1983). Concurrent validity of the Addiction Severity Index. *Journal of Nervous and Mental Disease*, 171, 606-610.
- Langenbucher, J.W., McCrady, B.S., Brick, J., & Esterly, R. (1993). *Socioeconomic evaluations of addictions treatment*. Washington, DC: President's Commission on Model State Drug Laws.
- Manu, P., Burleson, J.A., & Kranzler, H.R. (1994). Patient predictors of irregular discharge from inpatient substance abuse treatment. *The American Journal on Addictions*, 3, 122-128.
- Mazza, D. & Stevens, P. (1988). Comment on Miller & Hester's "Inpatient alcoholism treatment: Who benefits?" *American Psychologist*, 43, 199-200.
- McKay, J.R., Alterman, A.I., McLellan, A.T., & Snider, E.C. (1994). Treatment goals, continuity of care, and outcome in a day hospital substance abuse rehabilitation program. *American Journal of Psychiatry*, 151, 254-259.
- McKay, J.R., Cacciola, J.S., McLellan, A.T., Alterman, A.I., & Wirtz, P.W. (1997). An initial evaluation of the Psychosocial dimensions of the American Society of Addiction Medicine Criteria for inpatient versus intensive outpatient substance abuse rehabilitation. *Journal of Studies on Alcohol*, 58, 239-252.
- McLachlan, J.F., & Stein, R.L. (1982). Evaluation of a day clinic for alcoholics. *Journal of Studies on Alcohol*, 43, 261-272.
- McLellan, A.T., Hagans, T.A., Meyers, K., Randall, M., & Durell, J. (1997). "Intensive" outpatient substance abuse treatment: Comparisons with "traditional" outpatient treatment. *Journal of Addictive Disorders*, 16, 57-83.
- McLellan, A.T., Luborsky, L., Cacciola, J., Griffith, J., Evans, F., Barr, H., & O'Brien, C. (1985). New data from the Addiction Severity Index: Reliability and validity in three centers. *Journal of Nervous and Mental Disease*, 173, 412-423.

- McLellan, A.T., Luborsky, L., Woody, G.E., & O'Brien, C.P. (1980). An improved diagnostic evaluation instrument for substance abuse patients: The Addiction Severity Index. *Journal of Nervous and Mental Disease*, 168, 26-33.
- McLellan, A.T., Luborsky, L., Woody, G.E., & O'Brien, C.P. (1983). Predicting response to alcohol and drug abuse treatments: Role of psychiatric severity. *Archives of General Psychiatry*, 40, 620-625.
- Miller, N.S. (1995). History and review of contemporary addiction treatment. *Alcoholism Treatment Quarterly*, 13, 1-22.
- Miller, N.S. & Hoffman, N.G. (1995). Addictions treatment outcomes. *Alcoholism Treatment Quarterly*, 12, 41- 55.
- Miller, W.R. & Hester, R.K. (1986). Inpatient alcoholism treatment: Who benefits? *American Psychologist*, 41, 794-805.
- Miller, W.R. & Hester, R.K. (1989). Inpatient alcoholism treatment: Rules of evidence and burden of proof. *American Psychologist*, 44, 1245-1246.
- Mirin, S.M. & Namerow, M.J. (1991). Why study treatment outcome? *Hospital and Community Psychiatry*, 42, 1007-1013.
- Moos, R.H, Finney, J.W., & Cronkite, R.C. (1990). *Alcoholism Treatment: Context, Process, and Outcome*. New York: Oxford University Press.
- National Center on Addiction and Substance Abuse at Columbia University (1993). *The cost of substance abuse to America's health care system: Policy implications*. Available WWW: <http://www.casacolumbia.org/pubs/jul93/healpol.htm>.
- National Institute on Drug Abuse. (1985). *Guide to the Addiction Severity Index: Background, administration, and field testing results* (DHHS Publication No. ADM 85-149). Rockville, MD: U.S. Government Printing Office.
- Neergaard, L. (1998). Drug experts urge treatment, denounce jail for addicts. *The Kalamazoo Gazette*, p. A4.
- Neugarten, B.L., Havighurst, R.J., and Tobin, S.S. (1961). The measurement of life satisfaction. *Journal of Gerontology*, 16, 134-143.

- Post, R.M., & Weiss, S.R.B. (1988). Psychomotor stimulant vs. local anesthetic effects of cocaine: role of behavioral sensitization and kindling. *National Institute on Drug Abuse Research Monograph* 88, 217-238.
- Regier, D.A., Farmer, M.E., Rae, D.S., Locke, B.Z., Keith, S.J., Judd, L.L., & Goodwin, F.K. (1990). Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiologic Catchment Area (ECA) study. *Journal of the American Medical Association*, 264, 2511-2518.
- Rotgers, F., Keller, D.S., & Morgenstern, J. (1996). *Treating substance abuse: Theory and Technique*. New York: Guilford Press.
- Saxe, L., Dougherty, D., Esty, K., & Fine, M. (1983). The effectiveness and costs of alcoholism treatment. *Health Technology Case Study* 22. Washington, D.C., Office of Technology Assessment.
- Saxe, L. & Goodman, L. (1988). The effectiveness of outpatient vs. inpatient treatment: Updating the OTA report. *Health Technology Case Study* 22 Update. Washington, D.C., Office of Technology Assessment.
- Schneider, R., Mittelmeier, C., & Gadish, D. (1996). Day versus inpatient treatment for cocaine dependence: An experimental comparison. *Journal of Mental Health Administration*, 23, 234-245.
- Schwartz, M., Mulvey, K.P., Woods, D., Brannigan, P., & Plough, A. (1997). Length of stay as an outcome in an era of managed care. *Journal of Substance Abuse Treatment*, 14, 11-18.
- Sell, J.J. (1995). A critique of outcome studies misapplied: The Minnesota Model and managed care. *Alcoholism Treatment Quarterly*, 13, 17-31.
- Smart, R.G. (1991). Crack cocaine use: A review of prevalence and adverse effects. *American Journal of Drug and Alcohol Abuse*, 17, 13-26.
- Sobell, L.C., Maisto, S.A., Sobell, M.B. (1979). Reliability of alcohol abusers' self-reports of drinking behavior. *Behavior Research and Therapy*, 17, 157-160.
- Strohmetz, D.B., Alterman, A.I., & Walter, D. (1990). Subject selection bias in alcoholics volunteering for a treatment study. *Alcohol and Clinical Experimental Research*, 14, 736-738.

- Taylor, W.C., Obitz, F.W., & Reich, J.W. (1982). Experimental bias resulting from use of volunteers in alcoholism research. *Journal of Studies on Alcohol*, 43, 240-252.
- Tournier, R.E. (1979). Alcoholics Anonymous as treatment and ideology. *Journal of Studies on Alcohol*, 40, 230-239.
- Walsh, D.C., Hingson, R.W., Merrigan, D.M. (1991). A randomized trial of treatment options for alcohol abusing workers. *New England Journal of Medicine*, 325, 775-782.
- Washton, A.M. (1997). Evolution of intensive outpatient treatment (IOP) as a "legitimate" treatment modality. *Journal of Addictive Disorders*, 16, xix-xxv.
- Washton, A.M. & Stone-Washton, N. (1990). Abstinence and relapse in outpatient cocaine addicts. *Journal of Psychoactive Drugs*, 22, 135-147.
- Weinstein, S.P., Gottheil, E., & Sterling, R.C. (1997). Randomized comparison of intensive outpatient vs. individual therapy for cocaine abusers. *Journal of Addictive Disorders*, 16, 41-56.
- Weiss, R.D., Mirin, S.M., & Bartel, R.L. (1994). *Cocaine* (2nd ed.). New York: American Psychiatric Press.