A Treatment Model for Craving Identification and Management†

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Abstract—This article presents an addiction treatment model based on craving identification and management (CIM). Craving is broadly defined as the desire to use alcohol or other drugs; it increases the likelihood of use of these substances. In the CIM Model treatment interventions are referenced to craving, i.e., helping clients to identify their craving level and equipping them with strategies to avoid use. Four causes of craving are identified: (1) environmental cues (triggers); exposure to people, places, and things associated with prior drug-using experiences may cause immediate and overwhelming craving; (2) stress: addicted persons experience stress as craving; (3) mental illness; and (4) drug withdrawal: symptoms of both mental illness and withdrawal lead to craving if clients associate use with relief of these symptoms. The CIM Model incorporates four service delivery elements: Relapse Prevention Workshop, individual counseling, medical/psychiatric services, and screening for ongoing drug use. At its core, the CIM Model asks clients to be aware of craving, analyze its causes, and, based on those causes, implement specific strategies to prevent and manage craving. The CIM Model combines several treatment components, including control of exposure to environmental cues, establishment of a daily schedule, the use of behaviors that dissipate craving (tools), and treatment (with medications when appropriate) of mental health and withdrawal symptoms.

The CIM Model is a client-derived approach to achieving and maintaining sobriety based on a process of analyzing craving and managing it with an individualized program of recovery activities.

Keywords—addiction, cognitive-behavioral, craving, recovery, treatment

Addiction is a disease of the pleasure-producing chemistry of the brain. Four interrelated symptoms define addiction: loss of control over pleasurable activities (such as alcohol, other drugs, gambling, sex), continued use despite adverse consequences, craving (desire to use) and denial (distortions in thinking that protect drug use). Craving is the result of neuroadaptation changes induced by overstimulation of reward chemistry. The natural history of addiction is characterized by progressive loss of control over use, so that the loss of control occurs more readily as the disease progresses. Effective treatment interrupts the pathophysiology of the disease: compulsive use in the face of adverse consequences, driven by craving and protected by denial. Though the fantasy of many addicts is to return to controlled use of substances, this appears to be unrealistic for most because addiction is not only progressive but also chronic.

The societal response to persons with addictive disease has been to decrease the availability of drugs and increase the adverse consequences of use. The 1914 Harrison Narcotic Act restricting opiate use, the anti-alcohol era of Prohibition,
and the recent “War on Drugs” represent legislated solutions to drug abuse. This approach has had successes in reducing the availability and increasing the costs of illicit drugs, primarily by incarcerating drug sellers and drug users. However, incarceration does not treat the diseased brain chemistry, and recidivism rates for drug users are high. Early addiction treatment models were derived from the 12-Step program of Alcoholics Anonymous, a successful self-help program developed by and for addicts. For example, the Minnesota Model is an inpatient or residential treatment approach with a core curriculum derived from 12-Step principles in which spirituality anchors the addict’s commitment to behavior change. The residential treatment programs added environmental isolation and rigid structure to prompt addicts to learn new skills to improve disease management. Recently, treatment models utilizing theories from several disciplines have shown potential in helping addicts manage their disease, including cognitive-behavioral (Beck et al. 1993), psycho-educational, motivational enhancement (Miller & Rollnick 1991), and hybrid models that combine aspects of several models. The Matrix Model (Rawson 1995) is a well-known model of this type. Today, the goal of most treatment programs is to provide addicts with sufficient skill to maintain control over their behavior and sustain sobriety.

This article presents a treatment model based on craving identification and management. Grounded in the medical model, it focuses on craving as the pathophysiologic consequence of drug-induced injury to reward function. The Craving Identification and Management (CIM) Model is a distillation of feedback from clients about what has worked for them in achieving and maintaining sobriety in their own prior treatment experiences. Their ideas reflect the most pragmatic and effective methods addicts use to manage craving. This interactive process has generated the hypothesis that the final common step leading to drug addiction is loss of control over craving. For addicts, use occurs when craving overwhelms their relapse prevention strategies and control over behavior is lost. In the CIM Model, treatment interventions are referenced to craving, i.e., helping clients identify how close they are to using, and equipping them with preventive strategies to avoid use. Since craving is a common denominator in addictive disorders, craving identification and management is applicable to drug, alcohol, and other behavioral addictions. The CIM and Matrix Models have been shown to have similar efficacy for methamphetamine users (Rawson et al. 2004).

THEORETICAL FRAMEWORK

An addictive drug is a pleasure-producing chemical, whether legal or illicit, which affects brain pleasure and reward chemistry. These drugs activate pathways in the brain associated with feelings of well being, pleasure, and euphoria. Pleasure serves to reward completion of instinctive drives, adds interest to learning, and motivates behavior toward rewarding activities. In order for a drug to have abuse potential, it must interact with specific brain chemistry in the pleasure and reward centers of the brain.

Generally, the intensity of the high is related to the degree to which the pleasure chemistry is activated. In addition to receptor-binding properties of the drugs, their pharmacokinetic properties have a major role in producing euphoria. Drugs that are delivered to the brain in high concentrations over a short time concentrate the high, the dopamine and endorphin generated by the drug are abruptly dumped in the pleasure centers proportional to the sudden appearance of high concentrations of the drug. The resultant rush of euphoria is intensely pleasurable, leading to loss of control over use of the drug more quickly than occurs with lower-intensity drugs such as marijuana or alcohol.

Drugs of abuse produce their euphoric “high” by augmenting dopamine and endorphin functions in the pleasure and reward centers of the brain. By overstimulating reward circuits, drugs force adaptive changes that blunt the drug’s effect. Neuroadaptation is the process by which receptors in the reward and pleasure centers adjust to the high concentrations of dopamine and endorphin produced by the drugs. The principal mechanism of addictive disease is the relentless neuroadaptation that drugs induce through overstimulation of pleasure chemistry.

Cessation of drug use is characterized by a rebound towards dysphoria. Sobriety results in dramatic changes: inability to mobilize energy (anergia), the loss of ability to experience pleasure (anhedonia), and appearance of drug hunger or craving. Essentially, drugs injure sobriety by rendering it pleasureless. Drugs damage the ability of the user to experience normal pleasure, to obtain enjoyment from the activities of daily life (Figure 1). Daily life becomes unrewarding, and the user withdraws from activities that were formerly enjoyable. The user’s normal mental state changes from feeling well to feeling empty, bored or flat. For many users, sobriety itself becomes so unpleasant and dysfunctional that the risk of relapse to substance use is heightened.

Craving is broadly defined as the desire to use. Underlying the awareness of craving are changes that occur in the brain’s reward circuitry. These changes manifest as boredom, restlessness, irritability, and distractibility and may occur without conscious awareness of the desire to use. Higher levels of craving produce feelings of anger, anxiety, frustration, a feeling of entitlement, depression and mood swings. Occasionally there is a feeling of breezy and superficial elation consistent with manic swings of mood. Though not all negative affective states represent craving, “feeling negative” is a common antecedent to conscious awareness of a desire to use. Neuroimaging studies of the brain in the craving state document a characteristic pattern of physiologic changes. As the physiological/psychological discomforts increase, desire to use increases. Intense
levels of craving produce elevations in blood pressure, pulse, sweating, and dysphoria. Ultimately, craving induces an intense psychological preoccupation with getting and using the drug. Craving that is too intense, too severe, or too uncomfortable results in the loss of control over behavior.

LITERATURE REVIEW

The CIM Model is the result of an ongoing collaboration between treatment staff and the hundreds of clients who have attended the Relapse Prevention Workshops (RPW) conducted at the New Leaf Treatment Center. Over the 10 years of model development these clients have identified four common causes of craving as noted below. The literature for each cause of craving is reviewed briefly.

3. Mental illness: inadequately treated or untreated symptoms may lead to self-medication with alcohol or other drugs (Rohsenow, Corbett & Devine 1988; Khantzian 1985).
4. Drug withdrawal: inadequately treated or untreated symptoms may be experienced as intolerable and hence lead to use (Kosten 1990).

Environmental Cues

The literature supports a clear relationship between environmental cues and drug dependence both in clinical research and in animal studies. The conditioned place-preference test, widely used to assess the reinforcing properties of drugs, relies on this relationship. In conditioned place preference testing, animals are repeatedly administered a drug, and then permitted to choose between being in that environment and a dissimilar one. When drugs of abuse are tested in this paradigm, a preference usually develops for the environment paired with administration of the drug. In addition to this conditioned response, presumably based on the reinforcing effects of drugs, the pairing of drug-withdrawal effects with environmental cues has long been hypothesized to form a classical conditioning basis for craving (Ludwig & Wikler 1974; Wikler 1948).

An abundance of clinical data also supports the role of the environment in drug craving and use. In the laboratory setting, the task of imagining being in a cocaine-use environment was associated with a higher level of craving for both alcohol and cocaine than was imagining being in a neutral setting (Sinha et al. 2000). Presentation of opiate (Grüsser, Heinz & Flor 2000; Kasvikis et al. 1991; Sideroff & Jarvik 1980), marijuana- (Grüsser, Heinz & Flor 2000), cocaine- (Grüsser, Heinz & Flor 2000; Kranzler & Bauer 1992; Childress et al. 1988), and alcohol-related (Schneider et al. 2001; Grüsser, Heinz & Flor 2000) cues increases craving for those substances. In a sample of 35 crack cocaine addicts, 12 (34%) identified environmental cues as relapse triggers (Wallace 1989). Environmental stimuli have been reported to lead to alcohol craving (Westerberg 2000; Ludwig 1988) and relapse (Ludwig 1988). With respect to cigarettes, environmental stimuli are associated with low abstinence self-efficacy (Gwaltney et al. 2001) and craving (Steuer & Wewers 1985). A variety of environmental factors have been identified as precipitants of relapse to opiates (Bradley et al. 1989).

Stress

Several lines of evidence support the hypothesis that stress plays a role in acquisition and continuation of drug use. Behavioral stress in animals has been shown to facilitate the acquisition of self-administered morphine (Shaham & Stewart 1994; Alexander, Coombs & Hadaway 1978) and cocaine (Miczek & Mutschler 1996; Goeders & Guerin 1994; Ramsey & van Ree 1993). Stress in animals has also
been shown to reframe drug-seeking behavior in alcohol-
(L à et al. 1998), nicotine- (Buczkó et al. 1999), heroin-
(Shaham & Stewart 1995), and cocaine-experienced ani-
mals (Erb, Shaham & Stewart 1996).

Human laboratory work has been conducted with co-
caine users in order to define more precisely the role of
stress in drug craving (Sinha et al. 2000; Sinha, Catapono
& O'Malley 1999). Subjects prepared a script describing a
situation they had found very stressful, but which was not
associated with drug use; then, they were read these scripts
and asked to imagine themselves in the same situation.
Compared to a neutral imagery task, this situation led to
higher levels of cocaine (Sinha et al. 2000; Sinha, Catapono
& O'Malley 1999) and alcohol (Sinha et al. 2000) craving.
Data from clinical settings has been inconsistent with re-
spect to the role of stress in relapse to cocaine use (Hall,
Havassy & Wasserman 1991; Wallace 1989), perhaps in
part due to methodologic inconsistencies. In opiate addicts,
stress is associated with greater drug use (Brewer et al. 1998;
Kosten, Rounsaville & Kleber 1986).

Mental Illness/Psychiatric Comorbidity
A primary relapse factor cited in the literature (Marlatt
& Gordon 1985) is the presence of negative emotional states
originating from a variety of sources, including acute or
long-term withdrawal, dysphoria related to depression or
emptiness related to a borderline or narcissistic personality
disorder. It is clear from the literature that a high percen-
tage of persons with addictive disease also have other Axis I
or Axis II diagnoses. Making another diagnosis has always
been a tricky endeavor given that both drug intoxication
and drug withdrawal mimic various Axis I and II diagnoses.

Regier and colleagues (1990) found that of the people
with a cocaine use disorder, 76.1% had a comorbid disor-
der. The primary diagnoses often cited in relation to
addiction are mood disorders and anxiety disorders. The
percentage of people using cocaine who also have a mood
disorder ranges from 33% to 54% (Galanter 1993;
Rounsaville et al. 1991; Regier et al. 1990; Crowley et al.
1987; Gawin & Kleber 1986; Weiss et al. 1986). Anxiety
disorders are also reported frequently. Ross (Ross, Glaser
& Germainson 1988) reported that 60% of patients being
treated for addictive disease also had a lifetime diagnosis
of anxiety disorder. Forty-five percent reported symptoms
of an anxiety disorder in the past month, including general-
ized anxiety disorder, panic disorder, and post-traumatic
stress disorder. Other studies show a high correlation be-
tween substance use and a history of sexual abuse (PTSD).
Grice and colleagues (1995) reported that 80% of women
entering treatment for addiction reported a history of sexual
abuse.

Khantzian (1985) posited that addiction was under-
pinned by psychological dysfunction, including problems
with affect regulation, self-esteem, interpersonal relations,
and self-care. Foote and colleagues (1994) modified the
neurobehavioral treatment program to address these un-
derlying issues and thereby improve treatment for more
dysfunctional clients. They defined four areas of difficulty:
regulation of affect, interpersonal conflicts, "self" deficits,
and externalizing defenses. These Axis I issues as well as
the underlying characterological issues can increase tur-
mol and subsequent craving for many addicts.

Withdrawal/Abstinence Syndrome
One of the primary causes of craving is withdrawal
from the drug itself. Physical dependence means the indi-
vidual experiences physical symptoms when use of the
substance is discontinued. The symptoms that appear, con-
stituting an abstinence syndrome, include physical
dysfunction (pain, stomach cramps, diarrhea) as well as
disturbances of sleep, disorders of mood, anhedonia and
anergia, drug craving, and occasionally, psychotic symp-
toms. Similar to adaptive changes in the brain, the
overstimulating effects of the drug on other bodily pro-
cesses induce counterbalancing changes. Hence, with-
drawal symptoms are the mirror image of the drug
effects: if a drug increases blood pressure, in withdrawal
blood pressure is decreased. The process is one of toler-
ance to the drug and the physiological need to use more,
both to achieve the same effect and to avoid symptoms
that develop if use is below the tolerance point.

Many individuals have both the disease of addiction
and physical dependence. If the addict is physically de-
pendent, the appearance of withdrawal symptoms activates
the drive to use, drug craving becomes extremely inten-
se, and often the individual loses control. Withdrawal symp-
toms require immediate intervention when there is
interference with daily function and/or when the physi-
ological symptoms may have adverse medical conse-
quences. If the client reports symptoms that inter-
fere with daily function for more than three consecutive
days or the client's daily function is deteriorating or the
client is unable to sustain sobriety, the use of medications
to treat the withdrawal symptoms is indicated. Detoxifica-
tion is defined as the use of medications to treat withdrawal
symptoms. "Symptom-driven" detoxification provides
medications proportional to the severity of the symptoms
and for the length of time needed to ameliorate the with-
drawal symptoms. Good symptom control increases the
client's participation in treatment and reduces a major
source of craving.

Craving is the final common mediator in drug use.
The utility of craving in predicting drug and alcohol use
lies at the heart of the theoretical basis of the model. Al-
though there has been debate about the definition of craving
and whether it is a useful construct, various investigators
have addressed the issue and have typically defined craving
as a desire for a drug or alcohol. Retrospective
assessment of reasons for relapse has shown a significant
but not predominant role for craving (Marlatt 1996; Miller
Overall, in the past 24 hours MY CRAVING SCORE was

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<tr>
<td>No Desire to Use</td>
<td>Stress, anxiety, negative feelings</td>
<td>Thoughts of using, but I can cope</td>
<td>Urgent thoughts of using. Staying in control is a real struggle</td>
<td>I'm suffering and on the verge of saying the Hell with it</td>
<td>It is inevitable that I am going to use</td>
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& Gold 1994; Shiffman 1986; Ludwig & Wikler 1974), although there may be a bias towards recall of external events over internal states. Additionally, some of these retrospective studies asked respondents to identify a single cause of relapse, which might lead to underestimation of the role of craving if it is an intermediary in a causal pathway. (e.g. "I had a fight with my boyfriend that left me really upset, I started to have craving, and then I used.") Prospective studies in tobacco (Killen & Fortmann 1997; Killen et al. 1991; Harrington 1978), cocaine (Weiss et al. 1997), and methamphetamine dependence (Hartz, Frederick-Osborne & Galloway 2001) have shown a strong relationship between craving and subsequent use. Hence, craving has utility as a prognostic factor in a range of addictions. Significant unanswered questions include whether treatments can reduce craving and resultant drug use.

**CURRICULUM: CRAVING MANAGEMENT**

The CIM Model encompasses concepts that are part of the core curriculum in most drug treatment programs, including identification of environmental cues, stress management, and more recently, anger management. At the New Leaf Treatment Center, clients are introduced to an integrated curriculum addressing the causes of craving. Central to this treatment model is the concept that, once craving is recognized, it can be managed. Our clients have taught us some basic principles: whenever possible craving is best managed by prevention. If a high-craving activity is anticipated, plans to prevent use need to be in place before, during, and following the activity. Craving is easier to manage when it is at a low level than after it becomes intense. If use occurs, plans to end the use episode need to be in place. Once recognized, craving must be dissipated or neutralized by applying specific tools; for a tool to be truly effective, the negative feelings of craving must be replaced by constructive engagement with an activity not related to drug use.

At its core, the CIM Model asks clients to be aware of craving, analyze its component causes, and based on those causes, implement specific strategies to manage craving. Craving management as the major therapeutic focus can be visualized by use of a craving scale (Figure 2). Treatment is based on the following principles:

A. Addicted people relapse because of loss of control over craving;
B. Craving is caused by four general factors: environmental cues, stress, mental illness, and drug withdrawal symptoms;
C. The causes of craving can be predicted, recognized, and analyzed;
D. Craving can be managed with the use of a recovery program.

These general principles have generated a comprehensive treatment model.

**Components of Drug Treatment**

The CIM Model has two treatment phases with specific interventions and criteria for progress. Initiation of abstinence or stopping the use of drugs constitutes the first phase of treatment. Relapse prevention or stopping the return to drug use is the second phase of treatment. Of importance in initiating abstinence is control of exposure to environmental cues, treatment for withdrawal symptoms in the broadest sense, establishment of a balanced daily schedule, and management of mental health symptoms like
FIGURE 3
Components of Treatment

1. Initiation of abstinence
   Stopping use
   Avoidance strategies
   Drug detoxification
   Schedule
   Mental health assessment and treatment
   Measures to protect the client from environmental cues
   Use of medications to control withdrawal symptoms
   Establishing times for arising, bedtimes, and mealtimes

2. Relapse prevention
   Avoidance strategies
   Drug detoxification
   Mental health treatment
   Structure
   Controlling reentry to cue-rich environments
   Continued detoxification as needed
   Anticraving medications
   Continuing treatment as needed
   Adherence to a regular daily plan
   Minimize craving from the four “Fundamental Human Stressers”
   Hungry: Three regularly spaced meals daily
   Angry: Separate feelings of anger from losing control
   Lonely: One positive social contact per day minimum
   Tired: Daily practice of sleep hygiene
   Recovery tools: Behaviors that dissipate craving
   Exercise: Baths/showers: hot or cold
   Talk treatment groups: Orgasm: safe sex/self sex practices
   Individual counseling: Prayer, meditation
   Peer support groups: Psychological tools
   Journal writing: Acceptance
   Narcotics Anonymous: Letting go
   Alcoholics Anonymous: Relaxation exercises

depression and paranoia that interfere with the client’s ability to cooperate with treatment. Relapse prevention requires ongoing avoidance of environmental cues, development of a consistent, structured lifestyle, the use of “tools” or behaviors that dissipate craving, and continued management of withdrawal and/or mental-illness symptoms. In both RPW and in individual counseling sessions, a specific curriculum encompassing the components of drug treatment is taught and implemented on an individual basis over the first four to eight weeks of treatment. These treatment components are summarized in Figure 3.

Environmental Cues
Environmental cueing is defined as immediate in onset, high intensity, often literally overwhelming craving caused by exposure to people, places, objects, and events that the client has come to associate with using his or her drug. Environmental cues are often colloquially called “triggers.” Triggered craving is a physiological response, virtually always occurring when environmental cues are encountered. The client is taught that environmental cues will be a persistent problem for years after getting sober: if an old using partner reenters the client’s life holding drugs, for example, the risk of relapse is extremely high. Avoid-

ance strategies are measures to protect the client from exposure to environmental cues.

In the initiation of abstinence phase of treatment, a major project for the client is the identification of the client’s personal environmental cues and the development of a specific avoidance strategy for each. Using role-play, implementation plans are rehearsed both in RPW and in individual counseling sessions. The client is told, “If you can’t take steps to get cues out of the environment, you can’t get well,” and reminded that environmental cues are the most common cause of relapse in the first months of treatment. The client is forewarned that this exercise itself often leads to very high craving: when environmental cues are discussed, the client’s craving is likely to rise as a result of imagining the cues. A specific plan to safely manage high craving for the remainder of the day must be in place.

Environmental cues are identified with the aid of a worksheet adapted from 12-Step programs. The client is given a printed form with labels at the top listing: people (using partners, drug dealers), places (using haunts, liquor stores), things (drug paraphernalia), and other. Examples of the “other” category include the craving that commonly appears at the end of the workday (“cocktail hour” craving) or craving that appears in association with sex.

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The process of managing environmental cues has four steps.

1. Listing environmental cues: Under each heading, with careful and thorough thought, the client identifies each cue in this category, i.e., if the client encountered this item in the environment, it would lead to thoughts of use or actual use.

2. Identification of avoidance strategies: For every single identified cue, there must be a step-wise plan for how the cue will be avoided. General answers are not accepted; the strategies have to be feasible and genuine.

3. Rehearsal or role-play: Using examples generated from the clients' efforts, the clinician will role-play how the client will implement the strategies. A good practice example is the environmental cue of money: having money will trigger many addicts. Not having control of money beyond daily minimum expenses is a typical avoidance strategy. In role-play, the client identifies the person who will help him or her manage money. The client rehearses asking this person for help. Other clients in the workshop offer support and feedback as to whether they think this strategy is sufficient.

4. Implementing avoidance strategies: Workshop members will be curious as to how the strategies are working or not working for their peers in the group. For difficult strategies or those that were role played, this principal exercise is followed up in subsequent workshops with review as to how the implementation is proceeding.

In the relapse prevention phase when craving episodes are analyzed, presence of the drug in the environment often emerges as a common cause of use, presenting an opportunity for both the facilitator and the group to review environmental cueing and avoidance strategies. Frequently utilized avoidance strategies include changing phone numbers, seeking clean and sober housing, avoiding old haunts, separating from old using partners and situations, and developing plans for handling money.

In the individual sessions, the clinician raises the subject of environmental control, reviews how implementation is proceeding, and identifies barriers to implementation. For example, the home environment of a client may be so contaminated with cues that initiation of abstinence is impossible. The clinician may need to case-manage issues of sober housing and work to help the client accept the need for sober housing, as well as providing assistance with the application process.

Schedule and Structure

A structured, balanced lifestyle is a basic requirement for recovery. Once in place, this lifestyle in and of itself substantially reduces craving and increases the clients ability to withstand it. The principal concept of relapse prevention being addressed is “stress equals craving.” A lifestyle emphasizing balance and structure reduces stress and thereby reduces craving.

In the initiation of abstinence phase, the main approach to managing stress is the schedule, meaning that the same activities occur at the same time each day. Addicts do not tolerate idle time and the clinician thus teaches that each minute of every day (including quiet time) needs to be scheduled. The goal of scheduling is to avoid hunger, loneliness, and fatigue, but also to reduce instances of anger. The schedule uses the acronym HALT, originating from 12-Step programs, to guide the client in developing a daily schedule that addresses endogenous sources of stress:

- Hunger: The client is encouraged to consume three balanced meals per day at approximately the same time each day.
- Anger: The client learns to separate feelings of anger from losing control over behavior.
- Lonely: At least one positive social contact per day is essential for social well being. Initially, the contact may be in RPW or through a 12-Step meeting.
- Tired: The client must adhere to consistent times for waking and going to bed that provide adequate sleep based on individual need. Changing the schedule on weekends and holidays is discouraged.

In implementing the HALT lifestyle, our clients have taught us that a destructive aspect of early sobriety is insomnia. The client is instructed in the normal phases that can be expected in recovering normal sleep and in the daily practice of “sleep hygiene.” This involves learning how to ritualize going to bed, using relaxation tapes or sleep tapes, using sleep-inducing medication properly, managing insomnia, and managing nightmares. Additionally, the client is encouraged to include two 20-minute exercise periods per day, one period of quiet time for relaxation or prayer or meditation, and most importantly, a “fun” or pleasurable activity each day. Since reward dysfunction underlies addiction, rehabilitation of the patient to “normal fun” is necessary. A rested, well-fed, calm and supported client copes better with craving than one who is Hungry, Angry, Lonely, or Tired.

Time is allotted in RPW for each client to compile his or her daily schedule. High-risk times of day (e.g., after work, idle time periods, and times of prior loss of control must be identified as well as barriers to successful lifestyle change (“I don’t know anyone to have a social contact with” or “I don’t exercise”). In the group process, each client is invited to provide constructive feedback about other participants’ schedules. When the client has mastered the daily schedule, the perspective is broadened to include each of the next seven days, using the stated guidelines.

At least weekly, after the initial session, the clinician uses part of the workshop time to briefly review the principles of structure. Each client is encouraged to discuss the obstacles he or she has encountered in adopting the HALT
lifestyle. In the weekly early individual sessions the clinician spends time with the client, modifying the schedule and program structure. The clinician helps the client to identify risky times and to develop solutions to problems of scheduling.

**Tools to Relieve Craving**

"Tools" are behaviors that dissipate craving. Despite the best efforts of the client with respect to avoidance strategies, schedule and structure, episodes of craving will be frequent. At these times, the client is supported in the use of tools. In RPW clients are taught that when they recognize increased craving they should use a tool until the craving has been effectively managed. Each major tool is offered as a separate class in the RPW:

A. Exercise: Clients are encouraged to exercise regularly each day and the benefits of such exercise are reviewed. The client who already has an exercise program in place is encouraged to share the difficulties of starting and the benefits that help to keep the exercise program in place. In addition to the benefits of regularly scheduled exercise, our patients have taught us that exercise may be the single best tool to use when craving occurs acutely or is intense. Taking a walk until craving is reduced is a reliable strategy. At a minimum, 20 minutes of brisk walking is a threshold for relief of craving.

B. Prayer/Meditation: The experience of many of our clients is that craving can be managed with prayer. We discuss useful prayers, such as the Serenity Prayer, and model their appropriate use. Since feeling “centered” or balanced is such a key component of craving management, a class in meditation is offered to teach the basics of relaxation and meditation. Useful approaches include organized, structured modalities that teach meditation such as Tai Chi or yoga.

C. Talk: Clients who ask someone to help them usually find that the help is there. Clients are provided experience in “talking through” a craving episode with their peers. In this process, clients rate their craving, analyze the component causes, and describe their safety plans. A variation of this tool is journal writing, in which the client “talks to him/herself.”

Clients with high craving are encouraged to use peer-support groups, to contact their counselor, their nurse, or someone with whom they are working a program. To facilitate this, each RPW has a special class on how to use peer support, such as the 12-Step program. Time is allocated to educate clients regarding the utility of peer support and to work against any resistance. Clients are encouraged to go separately or in pairs to several different meetings, process and evaluate their experiences and responses (both negative and positive) to the meetings, work together to find a temporary sponsor for each, and consider basic Step study. The curriculum includes: What is AA? What are the Steps? What is a sponsor? What happens at an AA meeting? What is a good AA meeting for me? What does it mean to share at a meeting?

Our program maintains an up-to-date ledger that describes the available meetings in terms of time, location, breakdown of the meeting in terms racial, gender, sexual orientation, length of sobriety, and tolerance for clients who are prescribed medications. We encourage clients to shop for meetings that “fit” in order to avoid stress created by incongruence between the client and the meeting.

D. Relaxation exercises: Craving is frequently accompanied by increased tension, anxiety, agitation, and pacing. Teaching controlled breathing and conscious muscle relaxation techniques provides both a useful antidote to craving and a means to monitor its decrease.

E. Psychological tools: Psychological tools are derived from basic elements of clinical psychology. These include insight-oriented psychotherapy, cognitive behavioral therapy, brief therapy and crisis intervention. Though helpful in their own right, the use of such tools in addiction treatment is focused on connecting the insights gained from the therapy to managing craving and preventing relapse. For example, analysis of the feelings associated with a specific trauma can lead to an appreciation of how these feelings generate craving.

The psychological tools that appear to be easiest for a client to implement outside of treatment are those related to cognitive-behavioral principles. We help clients become aware that negative thoughts often lead to craving and help them develop tools to balance their thinking or at a minimum to avoid ruminating. Practicing these tools in sessions with a counselor builds the clients’ confidence to respond differently when they begin to experience craving in their own environment. Some of the tools used are listed below.

1. Thought stopping and thought replacement: This technique is used to intervene in the obsessive nature of craving. The client either yells “stop” or uses a rubber band to snap him or herself. The client then replaces the negative thought with other nonobsessive thoughts or activities. The client creates his/her own list of these thoughts or activities.

2. Awareness and identification of negative self-talk: The client learns to recognize when s/he is being self-denigrating, to challenge these negative thoughts, and to strive to balance their emotional quality.

3. Identification and challenge of cognitive distortions: “All or nothing” thinking or always “seeing the glass half empty.” The client works to identify the error
in his/her thinking and then finds a more rational perspective that is not extreme.

4. Developing a kind, gentle, nurturing internal voice to combat the harsh internal voice: For example, when clients are craving, they may ask what they can do to nurture themselves and have a list of nurturing activities, such as a hot bath, to refer to during craving episodes.

5. Comparing euphoric using memories with memories of negative consequences: The client creates a personal list of negative consequences. The list is written down and kept in the wallet or purse, so that when craving occurs, the list is available to facilitate recall of the painful experiences resulting from drug use.

DELIVERY OF THE CRAVING IDENTIFICATION AND MANAGEMENT (CIM) MODEL

The CIM Model incorporates four service delivery elements: RPW, individual counseling, medical/psychiatric services, and screening for drug use. The two primary phases of treatment, (1) initiation of abstinence, and (2) relapse prevention, each comprise specific interventions and criteria for progress. Movement through the phases of treatment is individualized. If the client is unable to sustain sobriety, he or she moves back to an earlier, more basic phase, with increased frequency of treatment and the possibility of transfer to a higher level of care if the client is medically fragile or in danger to self or others, or if drug detoxification cannot be conducted safely in the ambulatory setting.

Relapse Prevention Workshop

RPW is the core vehicle for educating the client to identify and manage craving. Assessing craving intensity with the aid of the Craving Scale is the initial, orienting activity of RPW. Once clients are introduced to the integrated curriculum addressing the causes of craving, they are asked to (1) analyze the factors that led to drug use, (2) identify strategies to avoid use, and (3) report on the effectiveness of their relapse prevention strategies. The workshop also enables clients to monitor their progress in developing a relapse prevention program. To prevent relapse, clients are taught to apply the four causes of craving (environmental cues, stress, mental illness, withdrawal) as reference to develop an awareness of the likelihood of use and to employ strategies to prevent use. For clients who continue to use, the same questions are used to analyze the using episodes, and modify the relapse prevention strategies to better address the causes of the client’s continuing loss of control.

At the heart of the CIM Model are three questions, which generate a basic strategy to achieve and maintain sobriety:

1. “What is your craving score?” Clients are taught to rate their craving on a scale of 1 (low) to 10 (high). (Figure 2) They are taught to be extra vigilant when the score is above 5, as the risk of relapse is proportionally higher. Clients are taught to monitor and keep records of environments and situations where they have experienced increased craving.

2. “What is the source of your craving?” Using the four causes of craving clients analyze where the craving is coming from. With the help of the facilitator, clients are helped to analyze their craving into component parts: Have you encountered an environmental cue? Did you have an avoidance strategy in place? If not, what avoidance strategy might work? What stresses are you experiencing? Are you having problems with depression or other distressing symptoms of mental illness? What symptoms of withdrawal (e.g. anxiety, insomnia, pain) are bothering you?

3. “What are you going to do to take care of yourself?” In this key portion of the workshop, clients are asked to review their current daily structure and the avoidance strategies that are in place. The client is helped to revise the components of his or her program, i.e., the combination of behaviors to prevent, reduce, and dissipate craving.

Drug use early in ambulatory treatment is expected. Because the analysis of use episodes is a core element of treatment, there is no “success” or “failure” in treatment. The client moves toward increasing sobriety at his or her own pace. Using is addressed judgmentally as part of the treatment process. We distinguish between “relapse,” in which the client gives up trying to get sober and disappears from treatment, and “use episodes” in which identifiable causes of craving combine to lead to loss of control. Analysis of use episodes is valuable clinically and dictates weaknesses in the program that can be identified and strengthened.

In addition to the process of quantifying craving levels, identifying sources of craving, and making plans to minimize the likelihood of use, there is a didactic component to RPW. Each the items that were discussed above as components of drug treatment is introduced to the group and presented didactically. Questions and discussion are encouraged. Topics are formally presented every two weeks to provide reinforcement for clients. Since clients may miss RPW sessions, the redundancy also ensures they do not miss basic concepts. Finally, clients enter treatment at different stages of readiness. Redundancy in the presentation of basic concepts is helpful to clients who will progress in their acceptance of treatment during the time they attend the RPW.

Individual Counseling

While the RPW serves as the core vehicle for instruction and implementation of curriculum, the CIM Model
utilizes individual counseling in a central role combining mental health treatment with addiction treatment. The individual therapeutic relationship is considered the anchor of treatment. A primary goal of the individual sessions is to develop a strong therapeutic alliance in which the clinician maintains a nonjudgmental, warm, and positive manner. By alliance we mean that client and counselor identify the common goal of recovery and join together to achieve it, with craving identified as the major barrier. In individual sessions, the counselor monitors key elements of the client's program, including identifying environmental cues and implementing avoidance strategies, developing a daily schedule and then a structured lifestyle, along with efficacious use of tools. In addition to helping the client meet the goals of recovery, the counselor provides a sense of hope that addicts often lack due to their failure to achieve sobriety on their own.

Psychological stress is often a precursor to addiction, and psychological factors strongly impact treatment. To process highly emotional material in early recovery without stimulating craving is challenging. However, for some clients progress towards recovery is blocked unless psychodynamic work is undertaken—e.g., gaining perspective on childhood trauma. In the CIM Model, the goal of counseling is to identify how the psychological symptoms stimulate craving to use rather than resolution of the psychological disorder per se. For example, how are feelings of sadness connected with the desire to use?

In the individual sessions, the counselor uses a figure-ground concept in which addiction and mental health issues are alternately in the foreground. Earlier in treatment, addiction issues are likely to take center stage much of the time, while mental health issues come to the foreground more in the middle and later stages of treatment. The exception to this is if the mental health issues are considered to be a major factor in continuing use episodes as described below. Early in recovery, the majority of attention is paid to issues related to initiating abstinence and relapse prevention. The individual sessions complement the group sessions by reinforcing the concepts and taking the material to a personal level more specific to individual needs.

Many of our clients have experienced severe traumatic life events or psychological conditions. Unmanaged, these experiences may be the basis for symptom-related craving. Discussion of emotionally laden material itself can stimulate craving, even when the environment is warm and supportive. Emotional or psychological issues are addressed at the point when they impact or threaten recovery or interfere with the progression of recovery. For some clients mental health issues such as psychosis or depression may need to be addressed early in treatment in order to give the client a better chance of establishing abstinence. Other clients have a history of trauma, such as childhood abuse, and have intrusive memories that cause craving or a need for escape. In these situations, the issues must be discussed—not for the purpose of "uncovering" or "working through" but to help the client identify, contain and manage such thoughts and feelings. Ultimately, the client must separate the experience of painful affect from craving.

The counselor asks the client to self-monitor his or her craving over the course of the session. The counselor terminates stressful discussions with ample time left in the session to establish with the client a plan to "keep myself safe" in anticipation of the craving generated by the emotional process. Reminding an agitated client that strong emotions increase the risk of use is essential. Through close monitoring, the counselor can alert other members of the treatment team to risky periods in recovery with the goal of enriching program activities and support.

As recovery progresses, more attention is paid to the psychological factors which may threaten either long-term sobriety or impact recovery and quality of life, e.g., trauma, unresolved mental health issues or personality disorders. The individual sessions allow for initial and ongoing assessment of the client's mental health status even as changes in status occur.

Medical and Psychiatric Services

The CIM Model is a medical model in that medical and nursing services are provided for ambulatory detoxification, mental health assessment and treatment, health education, and illness diagnosis and treatment. These services are incorporated into the client's individualized treatment plan. Medical detoxification services are provided by a clinician such as a nurse or clinical pharmacist, under the supervision of an addictionologist. Services are provided to individual clients in brief (15 to 30 minute) visits that provide close monitoring of symptoms. The detoxification component includes medication monitoring, withdrawal symptom scoring, and symptom management.

Detoxification is defined as the use of medications to treat drug or alcohol withdrawal symptoms. Treatment for physical withdrawal from substances is based on nationally recognized, published protocols. However, we emphasize "symptom driven" detoxification in which the amount and duration of medical treatment is determined by the severity and duration of the patient's symptoms. The primary criterion for determination of the need for medications is function. If the client has insomnia, anxiety, or depression that interferes with daily function, the use of medications is considered. The goal of the medical management component is to relieve distress and promote recovery by alleviating symptoms of withdrawal that interfere with function and/or increase craving. In our experience, between a third and half of the clients will require medication during the first weeks of treatment. A useful guideline for initiating medications is physiologic dysregulation, such as a pulse or diastolic blood pressure persistently greater than 90.
# FIGURE 4
Withdrawal Symptom Assessment Key

<table>
<thead>
<tr>
<th>Day of Detox</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>0 = absent</th>
<th>1 = mild</th>
<th>2 = moderate</th>
<th>3 = severe</th>
</tr>
</thead>
</table>

## Cardiovascular
- Blood pressure
- Pulse
- GI symptoms

## Neurological
- Insomnia
- Headache
- Tremors
- Muscle spasms
- Ataxia

## Sensory Sensitivity
- Pain
- Visual—bright lights
- Auditory—loud sound
- Skin itching/burning

## Cognition
- Memory loss
- Obsessive thoughts
- Racing thoughts

## Emotional
- Anxiety
- Agitation
- Irritability/anger
- Depression
One principle of outpatient treatment in general, and the CIM Model specifically, is an early return to work, school or parenting. For this reason, the clinician monitors the client’s physical and psychological symptoms (such as somatic pain, depression, insomnia, and anxiety) that may be risky to sobriety. The client is instructed in the possible role that medications offer in mitigating these symptoms, together with the risks associated with their use. Medications with abuse or dependence potential are avoided if possible. The client is asked to monitor symptoms, and to discuss them with the clinician. At such time that the client or clinician regards the symptoms as approaching a level that could trigger a use episode, a clinical trial of indicated medication is offered. Symptoms are closely followed in brief medication-management visits, and adjustments in medications are made when indicated. Similarly, medications that directly target craving, independent of withdrawal symptoms, are offered when indicated.

The use of pharmacotherapy in addiction treatment is not without risk. A therapeutic trial in which the client and treatment team monitor target symptoms with the aid of a flow chart focuses attention on an aspect of early recovery that historically has been overlooked (Figure 4). Symptom monitoring is regarded by the client as validation of distress, and puts a name and boundaries on otherwise generalized unhappiness in early recovery.

Since addiction is characterized by difficulty controlling substances that modify mood, some clients misuse their medication. The initial medication monitoring plan requires weekly visits. If the client has difficulty, the monitoring schedule is intensified. Together the client and clinician develop a structured regimen for safe medication management. Sometimes the client starts with daily visits for medication resupply and review of the symptom assessment flow chart. Over a period of four to six weeks most clients are able to graduate to safely managing their medications at home. Types of commonly used medications and their indications are shown in Table 1.

Urine Drug Screening

Episodes of drug use are expected in early sobriety, even in highly motivated clients with strong programs. Clients are encouraged to disclose and analyze using behavior as a part of the recovery process. Nevertheless, these episodes frequently create shame and fear of punishment in clients, sometimes making it difficult for the client to disclose use episodes. The CIM Model utilizes random, unannounced urine drug screens to monitor sobriety. Clients are instructed that these screens are a regular part of treatment and do not imply dishonesty or deceit. There is no negative sanction if the test is positive. When drug tests are positive, the client is asked to analyze the use episode from the standpoint of the four causes of craving, and to identify steps that will prevent use when these circumstances reoccur. When drug tests are negative, the client and the counselor can review what is working in their program to help them remain sober. This helps the client to feel good about the changes that they have made and reinforces the importance of continuing the recovery program.

The CIM model has been compared to the Matrix model in a multicenter trial (Rawson et al. 2004). At the New Leaf Treatment Center site 78 subjects were randomly assigned to receive treatment with CIM and 77 to receive treatment with Matrix; all were methamphetamine dependent. Drug use outcomes were not significantly different between the two models. The number of subjects who reported being methamphetamine free for 30 days at the time of discharge from treatment was 35% in CIM and 36% in Matrix. At six months after admission the number of subjects who reported being methamphetamine free for the past 30 days was 37% in CIM and 38% in Matrix. Contrary to other findings, in this study the between-sample difference in retention in treatment that was observed did not predict drug use outcomes.

CONCLUSION

The CIM Model is a client-derived approach to achieving and maintaining sobriety based on a conscious process of analyzing craving and managing it with an individualized program of recovery activities. Recovering is seen as a process of balancing craving with program. This is a dynamic model in which craving is seen as widely varying from moment to moment and day to day, and if unchecked
REFERENCES


